Devoted to
TEXTILE
CHEMISTRY
BLEACHING
DYEING
PRINTING
FINISHING

AUGUST 23, 1948
VOLUME 37, No. 17

AMERICAN DYESTUFF REPORTER

OFFICIAL PUBLICATION
of the
PROCEEDINGS
AMERICAN ASSOCIATION
OF TEXTILE CHEMISTS
AND COLORISTS

When light fastness is needed . . .

for union, automobile upholstery fabrics and outerwear you will find few reds of any category faster to light than Polar Red R. L.

Rating "6" (8 is tops) in light fastness and with brightness comparable with the older Polar Reds, Polar Red R L offers a new element for woolens and union fabrics.

Slower drawing than most Polar colors, Polar Red R L has more universal application than most of its series especially since it does work efficiently in neutral as well as acid dyebaths.

Write Geigy for a booklet illustrating Polar Red R L, its properties and its effect on extraneous fibres.

GEIGY COMPANY, INC.

89-91 BARCLAY STREET — NEW YORK—NEW YORK

Boston · Philadelphia
Charlotte, N. C. · Portland, Ore.
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Geigy
Dyestuff Makers Since 1859

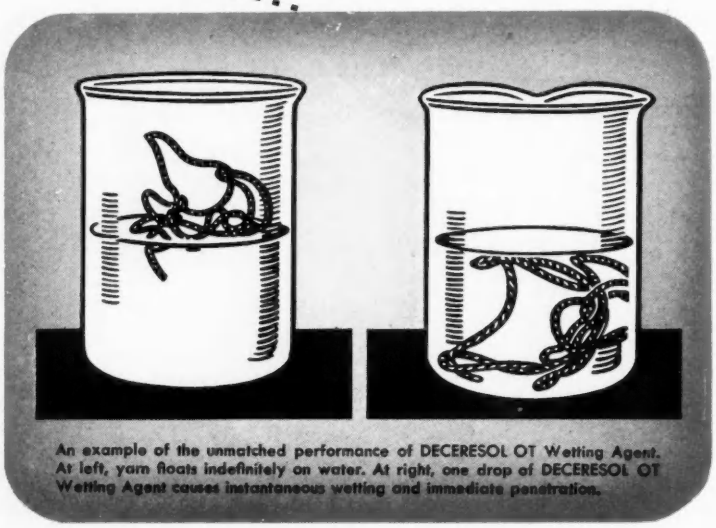
In Great Britain
The Geigy Co., Ltd.
National Buildings
Parsonage, Manchester

FOR IMMEDIATE SINKING IN WATER...

IN IMMEDIATE SUPPLY...

AND IMMEDIATE DROPPING IN COSTS...

STANDARDIZE AT THE QUALITY LEVEL WITH



An example of the unmatched performance of DECERESOL OT Wetting Agent. At left, yarn floats indefinitely on water. At right, one drop of DECERESOL OT Wetting Agent causes instantaneous wetting and immediate penetration.

...DECERESOL OT Wetting Agents

You get speedier application in the wetting of textiles – better penetration, dispersing and dye levelling properties – when you standardize on Cyanamid's DECERESOL° OT Wetting Agents, now again available in larger quantities.

But that is only *one* side of the story. DECERESOL OT Wetting Agents are also very economical to use. A little of it goes a long way. Its efficiency lowers costs, saves time.

And don't forget this *third* important advantage: the continual use of DECERESOL OT Wetting Agents results in *higher quality production*, as well.

If you are not now using DECERESOL OT Wetting Agents, it will pay you to write for further information about these superior wetting agents. Or, if you wish, one of our representatives will be glad to call and demonstrate DECERESOL OT Wetting Agents to you personally.

AMONG CYANAMID PRODUCTS FOR THE TEXTILE INDUSTRY ARE . . . AQUASOL° Sulfonated Castor Oils; NO-ODOROL° Finishing Oils; DECERESOL° OT Wetting Agents; PARAMUL°° 115 Water Repellent; Penetrants, Softeners, Finishes, Sizing Compounds, and other specialties and Heavy Chemicals. For low-cost chemical equivalent of distilled H_2O . . . FILT-R-STIL° Demineralizing Units.

SALES OFFICES: Boston, Mass.; Philadelphia, Pa.; Pittsburgh, Pa.; Baltimore, Md.; Charlotte, N. C.; Cleveland, Ohio; Cincinnati, Ohio; Chicago, Ill.; Detroit, Mich.; Kalamazoo, Mich.; St. Louis, Mo.; Los Angeles, Calif.; San Francisco, Calif.; Seattle, Wash. In Canada: Dillons Chemical Co., Ltd., Montreal and Toronto.

°Reg. U.S. Pat. Off. °°Trademark

American Cyanamid Company

Industrial Chemicals Division

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

American Dyestuff Reporter, Vol. 37, No. 17, August 23, 1948. Published every other Monday. Copyright, 1948, by Howes Publishing Co., Inc., One Madison Ave., New York 10, N. Y. Domestic subscription, $5.00; Canadian, $6.00. Foreign, $10.00. Entered as second-class matter, Nov. 6, 1919, at the New York, N. Y., Post Office, under the act of March 3, 1879.

for that Velvet Touch

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Reg. U. S. Pat. Off.

A NEW AND SUPERIOR CATIONIC SOFTENER FOR ALL FABRICS

if one of these is your problem, investigate SAPAMINE WL

1. Yarn softening – package or skein
2. Piece goods finishing
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4. Nylon hosiery and fabrics finishing
5. Modifying resin finishes
6. Softening chlorinated or shrinkproof wool yarn

it combines the most in softness and fullness with the least in shade change and effect on light fastness.

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Run Resistance

. . . run . . . run . . . yes, run is definitely the oldest and most aggravating word in the Hosiery Industry. Though it's impossible to maintain sheerness and completely eliminate runs . . . it is not impossible to minimize runs in the sheerest of sheer hose. Fancourt Chemists, working with a number of the country's outstanding mills, have developed finishes to increase the life of sheer hosiery . . . and to enhance the reputation of your hosiery. Calling a Fancourt field man will place this information at your disposal.

JOAN STANTON

The young lady who is having difficulties with her dog says, "I don't believe any girl expects hosiery not to run at all. We do expect it to last through enough wearings so that we'll feel we got our money's worth."

W. F. FANCOURT CO.

PHILADELPHIA, PA.

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Solving Finishing Problems Since 1904

sulphur colors

in sulphur colors, the first and foremost brand names are

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PRODUCTS OF THE GENERAL DYESTUFF CORPORATION

if your problem concerns sulphur colors a consultation with General Dyestuff Corporation may prove very beneficial

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ANILINE & ALIZARINE COLORS

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TEXTILE CHEMICALS

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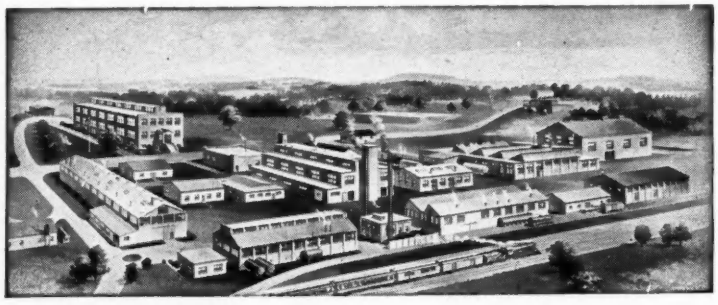
FOR

WOOL — COTTON — RAYON — ACETATE
AND MIXED FIBERS



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ANOTHER NACCONOL NR APPLICATION

Here's a Hot Tip: Use Wetter Water on Fires

So you think water is wet? Hah! Such old-fashioned ideas. The National Aniline Division has got something that is so wet it will give water a soaking. It's called Nacconol, a handy little chemical which can do to water what whisky will do to soda. Make it penetrating, that is. Nacconol was given a brisk workout yesterday in a special demonstration at the foot of Court St.

A group of student firemen under the direction of George A. Leo, superintendent of fire apparatus, and Dr. O. M. Morgan of National Aniline lighted piles of old furniture and straw.

Then they sprayed the fire with water, just to show they haven't lost touch with the traditions of the past. The fire went out. But, and this is important, it smoldered. Another pile was set on fire.

This time the fire-fighters were using water wetted with Nacconol. The fire gave a half-hearted hiss and quit. It didn't even smolder as was the wont of the fires of yesteryear.

Nacconol, explained Leo and Dr. Morgan, goes right after Class A blazes. It gives water a quality of penetration which enables it to get right down in the pores where it can do battle with the flames readily.

So there it is. Next time you feel blue about getting soaked in the rain, think of Nacconol and feel good again.

BUFFALO COURIER-EXPRESS

1/8% NACCONOL *Solution*

Wets 3 Times Faster!

For any wetting or washing operation, remember

NACCONOL* NR

AMERICA'S LEADING SYNTHETIC DETERGENT

COSTS LESS THAN SOAP

DOES MORE THAN SOAP

WASHES • WETS • FOAMS • DISPERSES
EMULSIFIES *AT ONE LOW COST*

Let us show you how much NACCONOL NR can save you

National Aniline **DIVISION • ALLIED CHEMICAL & DYE CORPORATION**

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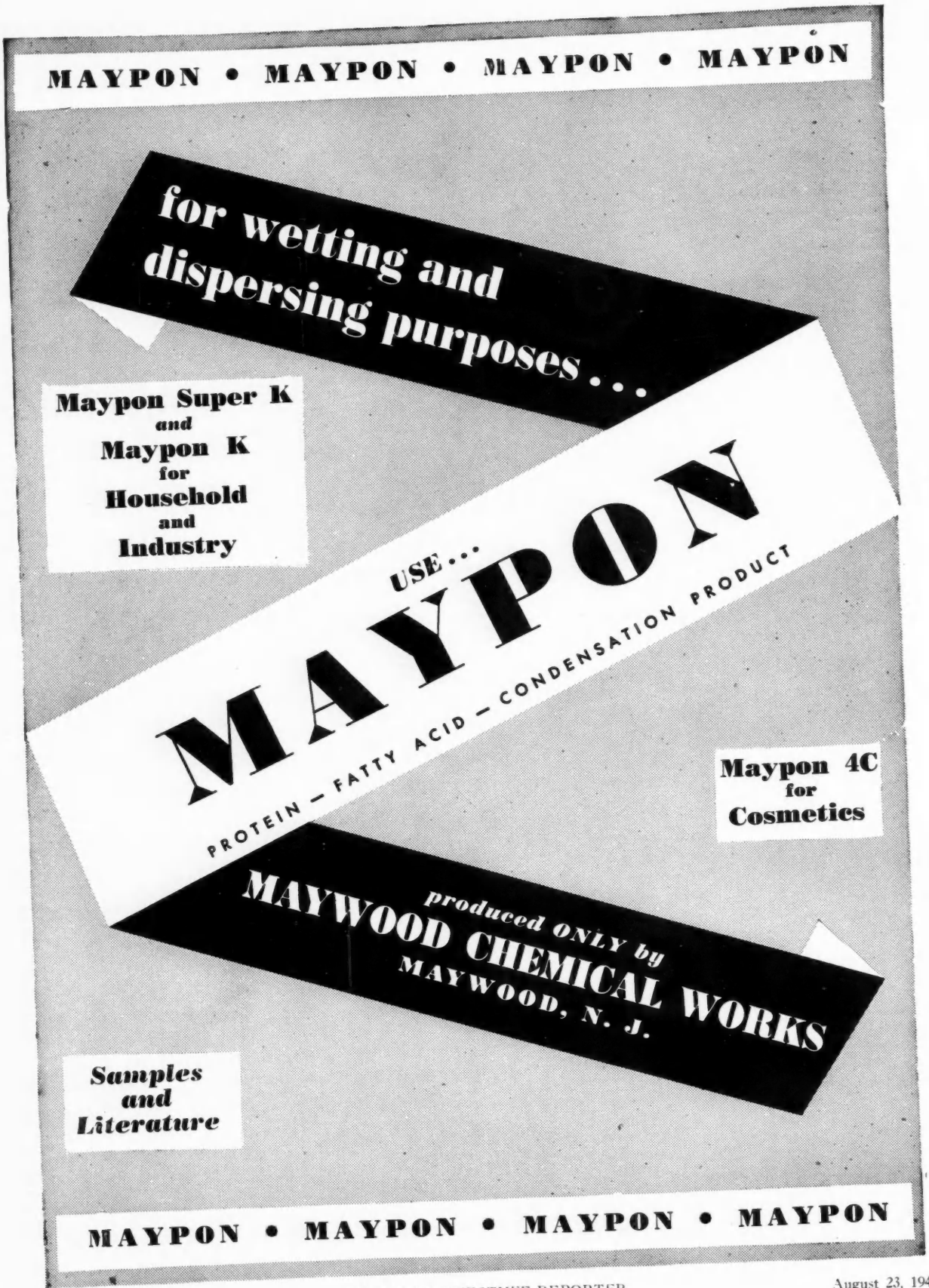
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for wetting and dispersing purposes . . .
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The Flame of Research

burned endlessly to create it...
burns brightly to proclaim it!!

Schollerized
WASHABLE WOOL
SAFE TO TUB • SAFE TO RUB

A PROCESS THAT MAKES WOOL *Truly* WASHABLE

AMERICAN ingenuity, encouraged by the unrivaled successes it has achieved in the Textile world, perfected the SCHOLLER WOOL SHRINKAGE CONTROL PROCESS*. In the research and development laboratories of Scholler Brothers, Inc., technicians labored constantly to achieve this process that makes wool *truly washable* . . . a process that can be applied to any wool or wool mixture. It prevents matting and felting and controls wool shrinkage to a maximum degree yet permits the wool to retain all of its inherently rich, natural qualities! And, because nothing is added to the wool nor taken from the wool, its anti-shrink, anti-felt properties are effective for the life of the fabric!...

Resiliency, elasticity, softness, texture, feel or "hand" are completely retained or enhanced. The tensile strength of the original yarn is unchanged or slightly increased.

Yes, Schollerized wool is *better* wool *because* it's Schollerized!

SCHOLLER BROTHERS, INC. PLANT AND FACTORIES

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**Patent Pending*

The fascinating story on the Scholler Wool Shrinkage Control Process—and its adaptability to your product—is yours for the asking. Write to:

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SERVING THE TEXTILE INDUSTRY FOR MORE THAN 40 YEARS

FOR YOUR INFOR M ATION

NOW... BETTER MERLON FINISHES REACH WIDER RANGE OF FABRICS

Better finishes . . . for a greater variety of fabrics . . . are indicated by new laboratory developments with the Merlons, Monsanto's series of thermoplastic resin dispersions. Finishes both soft and durable, and of high quality and economy, can be achieved with the Merlons without curing or after treatment. State your problem in the handy coupon and you will get full information in addition to more news about these major applications:

COTTON SHEETS: Monsanto's Merlon is already doing an outstanding job for cotton sheets . . . the softer, finer finishes appeal to department store buyers. The better "hand" remains on the merchandise after washing.

COTTON DENIMS: Abrasion resistance . . . an outstanding property of Merlon formulations . . . gives added toughness, longer life, better general wearability to fabrics ranging from heavy-duty cotton denims to light sheetings. Increases in abrasion-resistance of from 100 to 300% have been noted.

RUG BACKING: Merlon resin has an adhesive effect in locking pile yarns to the base fabric . . . besides adding strength and body to the fabric. The resins promise to produce outstanding results in rugs, pile fabrics and similar weaves.

AND OTHERS: These applications are only a small sampling of all the products which can get better, more durable finishes with Monsanto's Merlons. Whether or not your fabric is named above, you might well find that the Merlons will do a better, more economical finishing job for your fabric.

Technical bulletins on the Merlons are available. And so are trained Monsanto technical personnel who will help you adapt Merlon to your specific needs. The handy coupon checked at H1 will bring you complete information.

AUTOMOBILE UPHOLSTERY: Here again, long-term durability and wear . . . given by increased abrasion resistance and fabric strength . . . make the Merlons outstanding. In fabrics like automobile upholstery . . . subject to more than ordinary wear and tear . . . Merlon holds fibers intact within the body of the fabric.

FINE WOOLEN FABRICS: In many of the fine grades of woolen fabrics, the Merlon resins reduce pilling. That's why Merlon formulations are suggested for suitings . . . and for similar consumer merchandise using high grade wool.

COTTON: Easy to apply . . . it's necessary only to pad and dry fabrics with the diluted Merlon. No lengthy finishing operations are involved. Faster production with Merlon spells greater over-all economy . . . pound for pound of finish.

WHAT THE MERLONS ARE: Monsanto has three series of Merlon thermoplastic resins: One series, Merlon KR, is a group of polyvinyl acetate dispersions in water; Merlon BR and BRS are polyvinyl butyral resins and Merlon S and SP are polystyrene dispersions. By combining these Merlons in varying formulations and concentrations, they can be adapted to practically all types of textile finishing.

STED gives uniform scouring results

Consistently good, uniform, predictable and controlled scouring results . . . despite varying degrees of water hardness . . . are assured with Sted, Monsanto's powerful, yet gentle all-purpose textile detergent. A given amount of Sted does a uniformly outstanding job in all textile cleaning operations.

Sted removes soil and holds it in suspension off the fabric . . . so that it is rinsed without redeposition. It is used for:

WOOL: Raw Wool Scouring.
Scouring tops.
Scouring before dyeing.
Skein Scouring.

RAYON: Removes graphite grease and sizing, and is used as an afterwash in rayon fini-shing.

COTTON: Kier boiling, continuous bleaching and soaping off prints.

Economical Sted is now succeeding in the toughest textile job. Your inquiries are invited through H2 on the coupon.

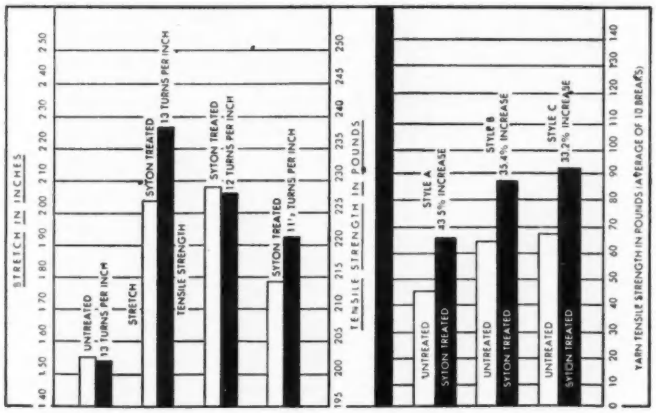
RESLOOM treated wool shirts are marketed by McGregor

Wool shirts . . . treated with Monsanto's Resloom Formula W for Washability . . . are being delivered to leading department stores by McGregor Sportswear. One shirt is a William Tell wool blend flannel Resloom-treated for washability and for soft "Thistle-down" hand. A second shirt . . . a Royal Wonderwool pure wool flannel . . . is certified launderable by the American Institute of Laundering.

To find out how you can get Resloom's proved results in your woolens, check H3 on the coupon.

Resloom, Merlon, Syton: Reg. U. S. Pat. Off.

New trials prove SYTON aids woolen and worsted spinning



The application of silica sols to textile fibers as an aid to spinning is covered by U. S. Patent 2,443,512 issued to Monsanto Chemical Company.

Now . . . many actual mill runs prove that Monsanto's Syton . . . on both woolens and worsted systems . . . increases yarn tensile strength from ten up to 30%. Applied at the picker for woolens and at the gill box for worsteds, usually in a spray or dip, this submicroscopic silica controls fiber lubricity . . . strengthens the yarn . . . and produces reports like these:

"A 20% to 30% increase in tensile strength with Syton."

"A 10% decrease in twist enabled us to maintain the same yarn strength with an 8% production increase."

". . . Syton gives good results in decreased fly and decreased ends down."

These comments illustrate major operating advantages mills get from increased yarn strength with Syton:

- **INCREASED PRODUCTION:** Since yarn strength is increased, the amount of twist necessary can be reduced and production speeded.
- **LOFTIER YARNS:** Less twist means loftier yarns . . . with tensile strength equal to or greater than that of untreated yarns of higher twist.
- **FEWER ENDS DOWN:** Reductions in ends down vary from 25% to 50% depending on the grade of wool.
- **IMPROVED SPINNING EFFICIENCY:** Produces more uniform yarn, with less beard and thin spots, reduced fly waste and better drafting.
- **FINER YARNS POSSIBLE:** Syton-treated yarns can be spun closer to the limit spin.

These successful mill runs are all the more reason why you should get in touch with Monsanto now . . . and find out how Syton will help you in your mill. You can get full information . . . and technical cooperation . . . by checking H4 on the coupon.

MONSANTO
CHEMICALS ... PLASTICS

MONSANTO CHEMICAL COMPANY, TEXTILE CHEMICALS DEPARTMENT
Dept. ADT 8, 140 Federal Street, Boston 10, Mass.

I am stating my problem in an attached letter so you can inform me specifically on ☐ *H1,* ☐ *H2,* ☐ *H3,* ☐ *H4.*

I wish general information on ☐ *Merlon,* ☐ *Syton,* ☐ *Sted,* ☐ *Resloom.*

Name _____ Title _____

Firm _____

Address _____

City _____ State _____

SERVING INDUSTRY . . . WHICH SERVES MANKIND

Threshold treatment with

inhibits corrosion—

prevents precipitation of dissolved iron

—and these are only two of many advantages of Calgon in textile processing. For full information, write for the bulletin "Calgon Data for the Textile Chemist."

*T. M. Reg. U. S. Pat. Off.

HAGAN HALL BUROMIN CALGON

calgon, inc.

A SUBSIDIARY OF HAGAN CORPORATION

HAGAN BUILDING PITTSBURGH 30, PA.

PERMA - PAR R

An improved cation action finish

RESISTANT TO WASHING & DRY CLEANING

REFINED PRODUCTS CORPORATION

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Manufacturers of PERMA-CIDE, the approved, outstanding, mildew-proofing agent

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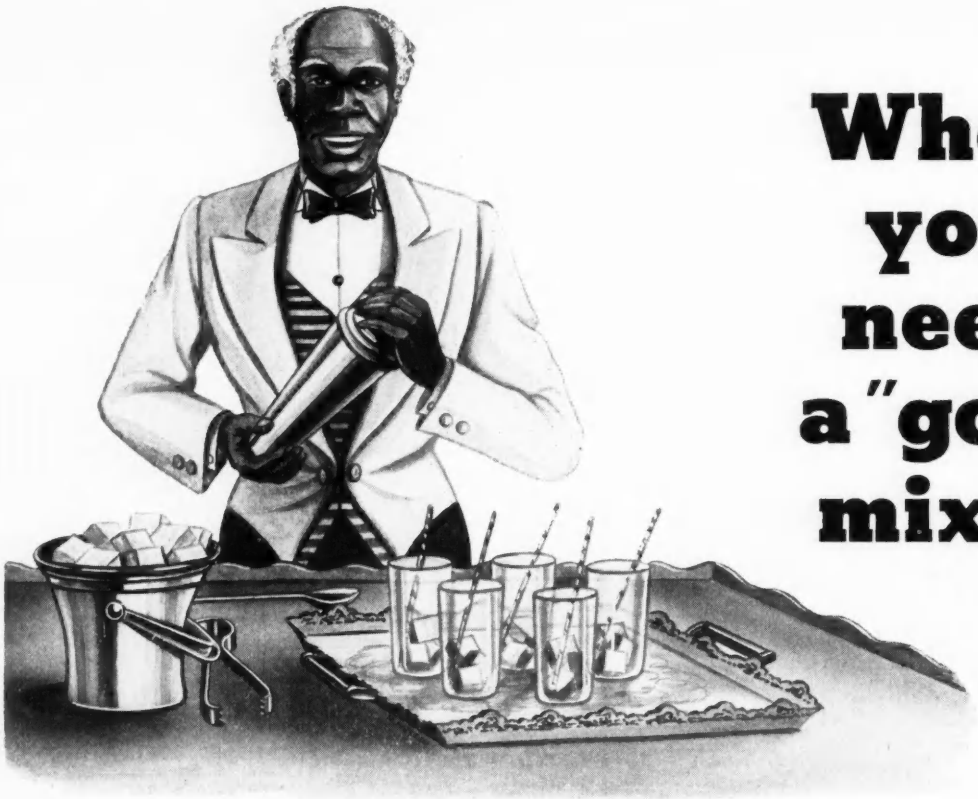
CARBIC COLOR & CHEMICAL CO., INC., 68 Pine St., Providence, R. I.

California Representative: SIDNEY SPRINGER, 2300 S. Vermont Ave., Los Angeles 7, California

Canadian Selling Agents: Carbic Color and Chemical Co., Inc., 56 McNab Street South, Hamilton, Ontario

Exporting Agent: Chem-Cel Company, 82 Wall St., New York City



When you need a "good mixer"!

...USE NEUTRONYX 330

NON-IONIC SURFACE-ACTIVE AGENT

OUTSTANDING ADVANTAGES

Unusually effective emulsifying action, together with exceptional dispersing properties.

Excellent penetrating and wetting action.

Complete compatibility with electrolytes, hard water and anionic or cationic surface-active agents. Disperses insoluble anionic-cationic complexes.

The stability of Neutronyx 330 against hardness, electrolytes and anionic or cationic materials makes it one of the most useful detergent and emulsifying agents available.

For Detergent, Emulsifying and Dispersing Action

It is widely used, of course, as an auxiliary detergent in hard water conditions, but it will be well worth your while to consider Neutronyx 330 for the following specific textile applications:

- Scouring assistant for rayon and acetate.
- Leveling agent or retarder in acid dyeing of wool.
- Dispersing and solubilizing agent for acetate colors.
- Dispersing agent for pigments in organic vehicles.
- Assistant in chlorination of wool in shrink-proofing.
- Assistant to insure more even exhaustion of anionic or cationic finishes.

Write for Onyx Technical Data Sheet 1-T. It covers the properties and applications of Neutronyx 330.

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AMANTHRENE* VAT COLORS
provide the answer to the demand for
better color fastness in textiles

DARK BLUE BO

in paste or powder form

A deep, full toned Navy o[illegible]eddish cast...
well suited to the fast coloring of cottons and rayons
by any of the vat application processes.

Especially recommended for printing and dyeing quality fabrics
when the cardinal call is for effective resistance
to light, washing, peroxide bleach and chlorine.

Another of the Amanthrene range of superior vat colors.
For detailed information on the whole range available,
as well as data regarding your own particular requirements,
consult our nearest branch. A.A.P. technicians are always
happy to be of service.

AMERICAN ANILINE PRODUCTS, INC., 50 Union Square, New York, N. Y. • ***Plant:*** Lock Haven, Pa.
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*Reg. U. S. Pat. Off.

Liquid
HYDRALDEHYDE
The Name to Remember When Buying Stripping Agents

Outselling all others since its origin twenty years ago — it is *today* the woolen industry's *safe* stripper. Our constant efforts to eliminate free zinc in *liquid* HYDRALDEHYDE through modern manufacturing methods assure stronger fibres in reworked wool and piece goods.

Test *liquid* HYDRALDEHYDE against any other stripping agent offered — either powder or liquid — for a true comparison of the fibre's breaking strength.

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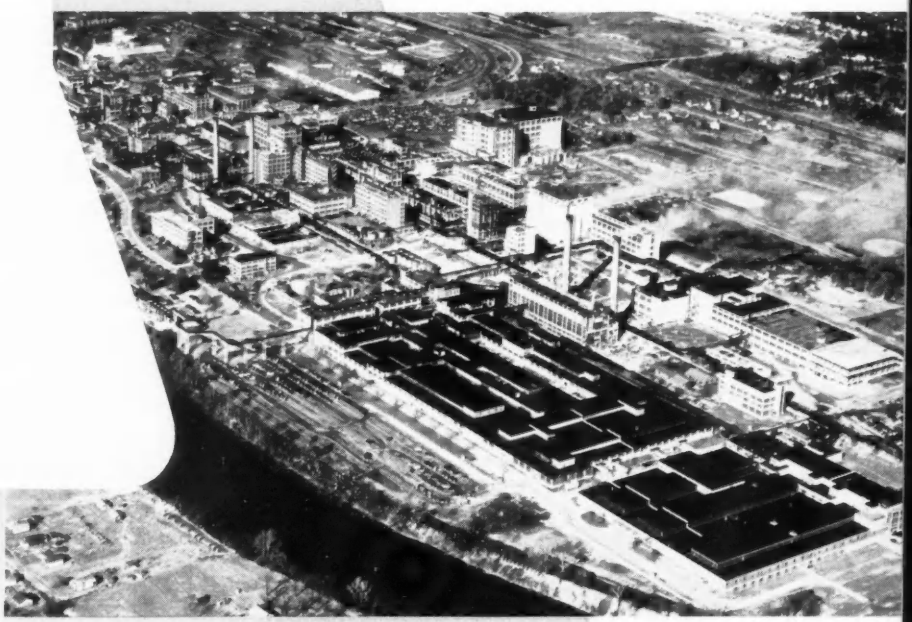
261 FRANKLIN STREET BOSTON, MASS.

FACTORY · LOWELL JUNCTION · MASS.

EAD

Eastman Acetate Dyestuffs

A wide variety of colors is available in Eastman Acetate Dyestuffs, especially developed for the dyeing of synthetic fibers by scientists who have had long experience in the production of colors for cellulose products. Eastman Acetate Dyestuffs are manufactured under strict laboratory control in a modern plant to assure dyers of uniformly high-quality dyes. The full benefit of Eastman research on dyeing problems is extended without obligation to users of these dyestuffs.



Eastman Acetate Dyestuffs are sold in the United States through Tennessee Eastman Corporation in Kingsport, Tennessee, and Lodi, N. J.; in Canada, through Clough Dyestuff Company Ltd., 33 St. Mathieu Street, St. Laurent, Quebec.

TEC

Tennessee Eastman Corporation

—A SUBSIDIARY OF EASTMAN KODAK COMPANY

A.A.T.C.C. CONVENTION ISSUE

OCTOBER 18, 1948

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NOTE
IMPORTANT FEATURES

All advertising copy must be in our hands by SEPTEMBER 20th

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Additional copies of this important issue will be distributed at the Convention

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★ Complete Program of the AATCC Convention

★ Abstracts of All Technical Papers

★ Consolidated History of the Southern Sections

★ The Convention City — Points of Interest and Significant Facts

★ Other Timely Articles

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NATIONAL MEETING and CONVENTION

AUGUSTA, GEORGIA
OCTOBER 21-23
1948

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AMERICAN DYESTUFF REPORTER
One Madison Ave. New York City

teamwork makes the difference

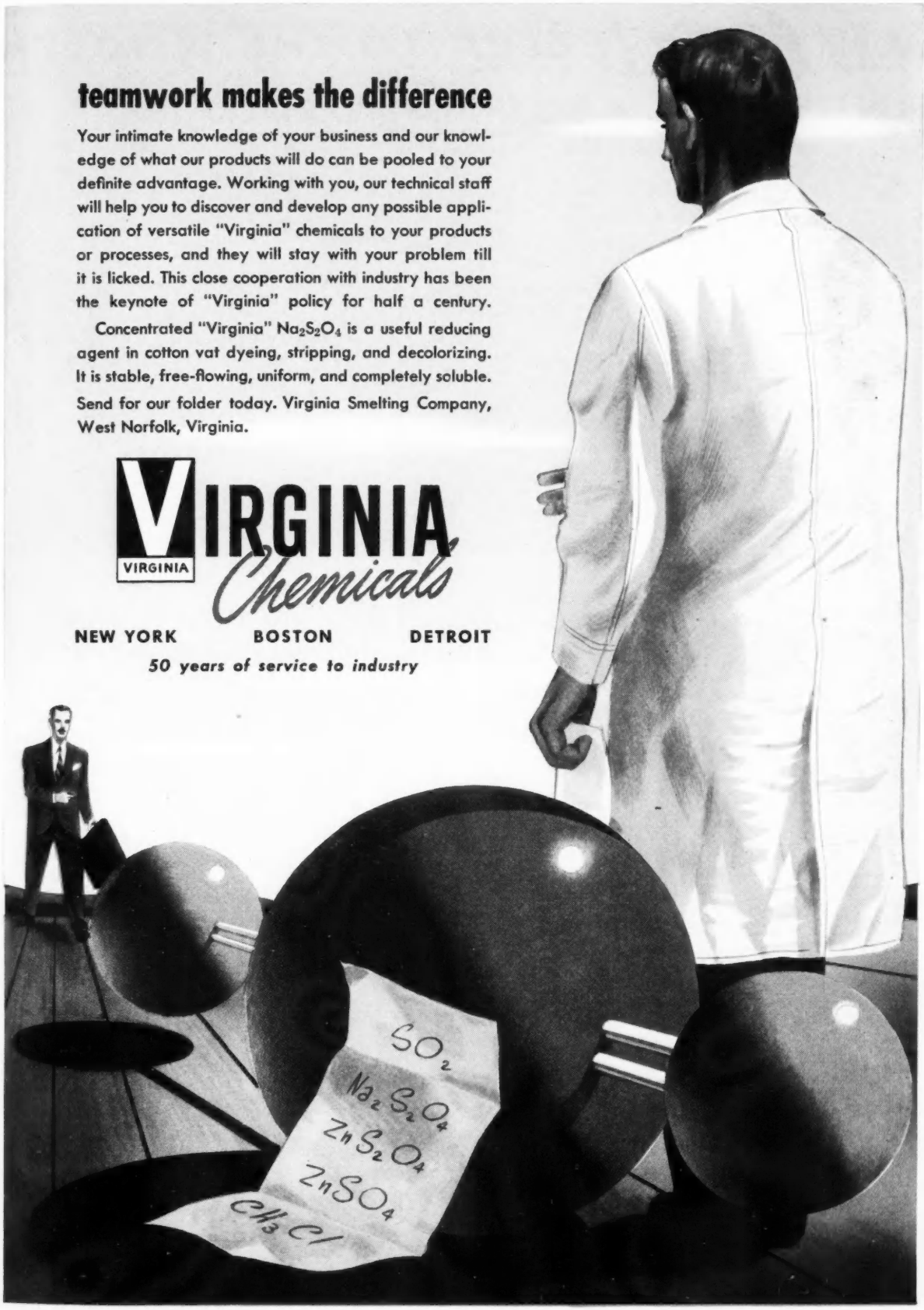
Your intimate knowledge of your business and our knowledge of what our products will do can be pooled to your definite advantage. Working with you, our technical staff will help you to discover and develop any possible application of versatile "Virginia" chemicals to your products or processes, and they will stay with your problem till it is licked. This close cooperation with industry has been the keynote of "Virginia" policy for half a century.

Concentrated "Virginia" $Na_2S_2O_4$ is a useful reducing agent in cotton vat dyeing, stripping, and decolorizing. It is stable, free-flowing, uniform, and completely soluble. Send for our folder today. Virginia Smelting Company, West Norfolk, Virginia.

VIRGINIA Chemicals

NEW YORK BOSTON DETROIT

50 years of service to industry



AN *Open Letter* TO THE WOOLEN INDUSTRY ABOUT *Proxol*

THE PROCTER & GAMBLE COMPANY

Executive Offices
CINCINNATI, 1, OHIO, U.S.A.

THE WOOLEN INDUSTRY
U. S. A.

Gentlemen:

As one of America's leading manufacturers of textile detergents, Procter & Gamble has acquired an intimate knowledge of wool processing problems. Our prime interest, of course, has been with processes involving detergents. However, since every step in wool manufacture is affected by preceding steps we have, of necessity, become familiar with all stages of wool processing.

Time and time again our technical men have run into problems caused by the unsatisfactory performance of wool oils. Such oils not only produced plenty of processing headaches but also detracted from the saleability of the finished goods. The most common shortcomings of these oils were:

Unstable emulsions
Uneven spreading properties
Failure to emulsify in hard or cold water
Poor static conduction, causing excess fly
Gummed-up or rusted card clothing
Damaged aprons and tapes
Inadequate lubrication and drag, causing more breaks and less production
Tendency to oxidize, causing discoloration, poor scouring and bleaching, uneven dyeing
Tendency to develop undesirable odors in the finished cloth
Excessive soap and detergent usage

Careful analysis of the weaknesses inherent in many existing wool oils led to the Company's decision to develop an oil with all the carding, spinning, and scouring characteristics demanded by woolen mills.

Today - after more than five years of laboratory work and plant usage - that oil, PROXOL, is a reality. Proxol offers the wool processor many unique advantages. We urge you to prove this to your own satisfaction with a thorough trial of Proxol.

Sincerely,

Procter & Gamble

P.S. Proxol is made by the makers of Olate, the universal textile soap.

PROXOL
the Multi-Quality **WOOL OIL**
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What is Proxol?

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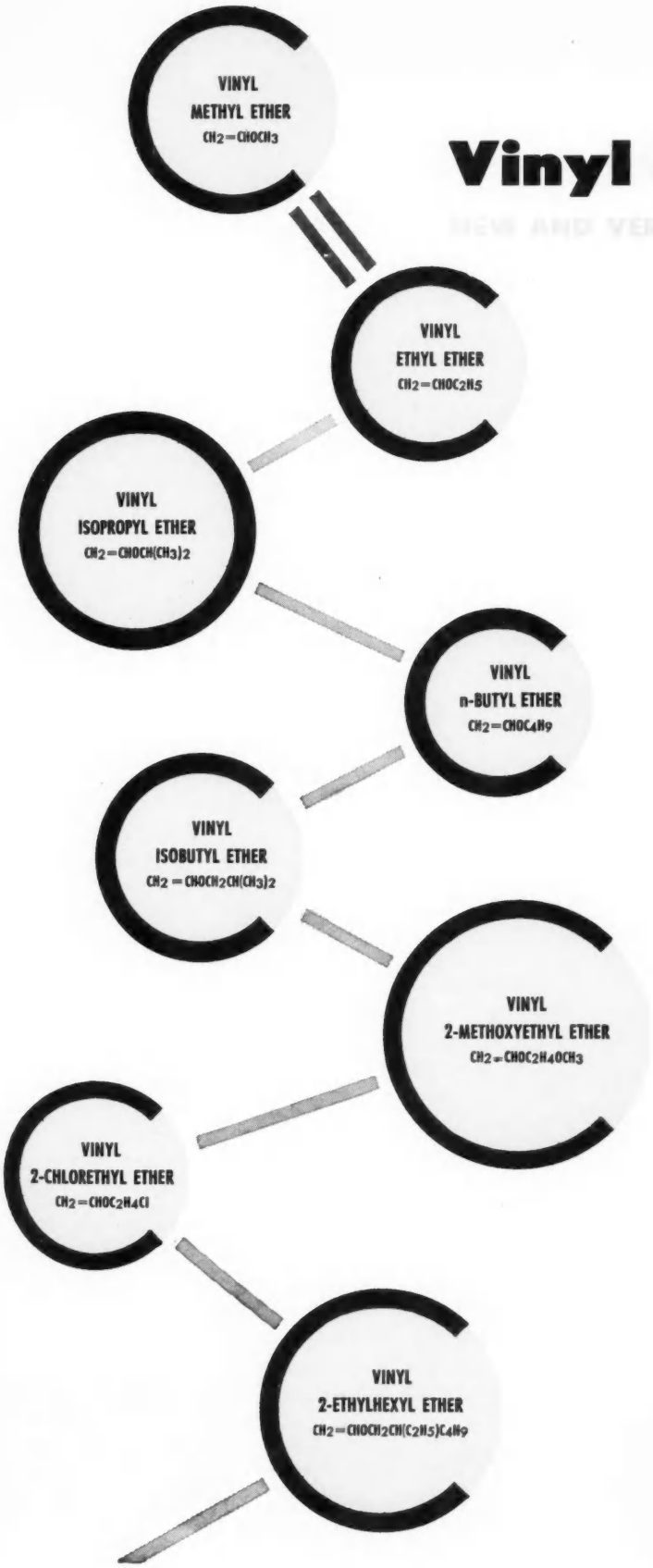

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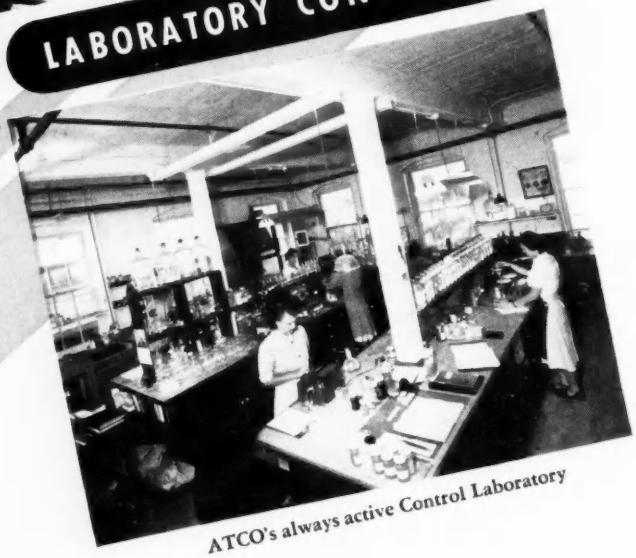

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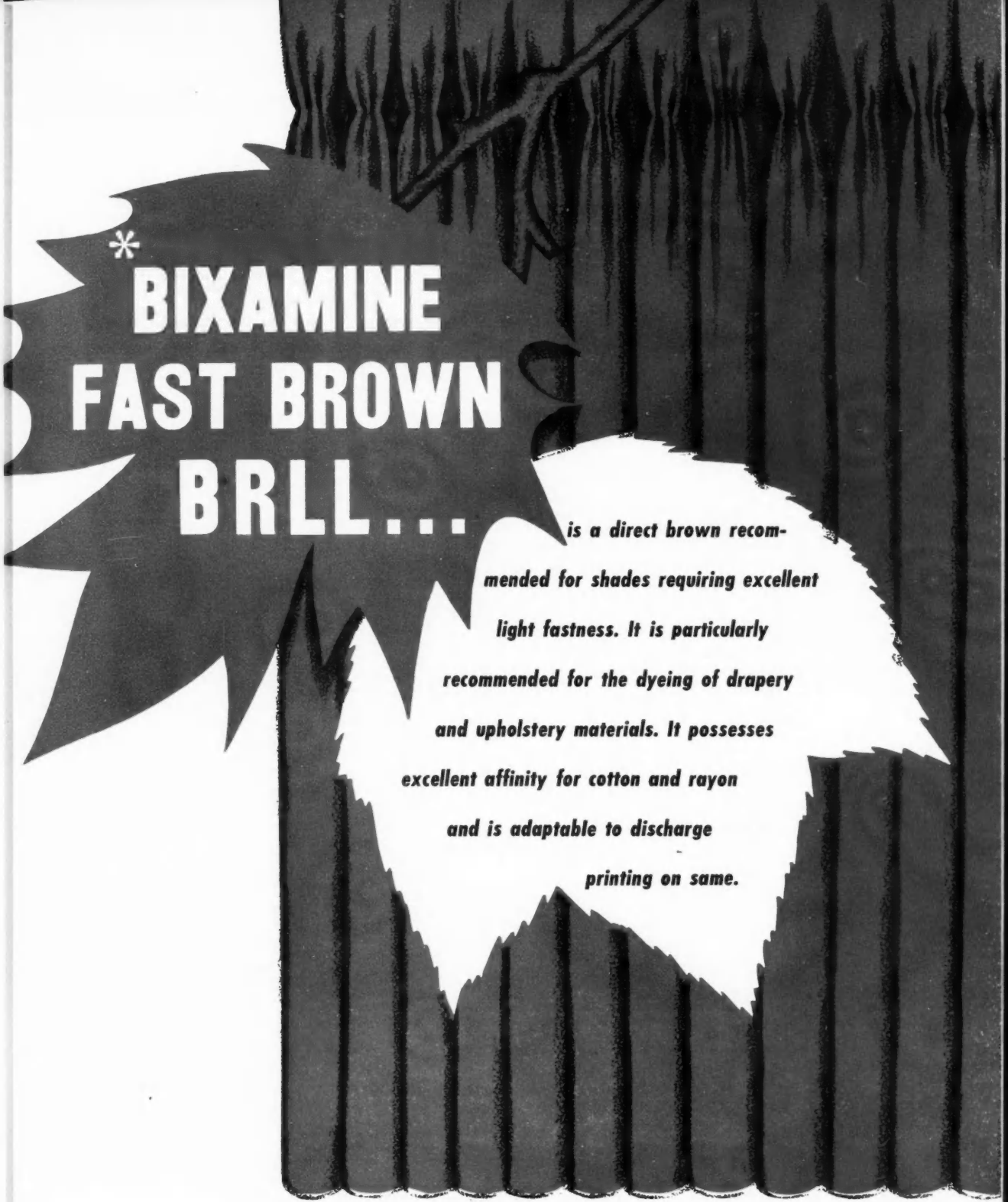

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August 23, 1948

VOLUME 37 NUMBER 17

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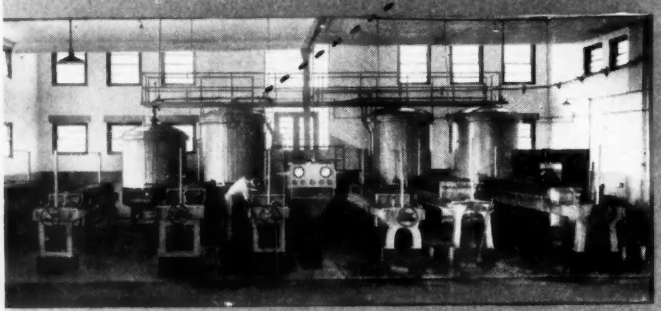

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AUGUST 23, 1948

Correspondence Re Meeting on Results of Buxton Meeting

AMERICAN STANDARDS ASSOCIATION, INC.

August 6, 1948

Mr. H. F. Herrmann, President,
American Association of
Textile Chemists and Colorists.
My dear Mr. Herrmann:

The results of the ISO Technical Committee 38 meeting on Textiles, held in Buxton, England, June 7-12, 1948, seem to be so important to the United States and, in particular, to the textile industry, that there should be a proper presentation by the delegation to the leaders of that industry.

Accordingly, it is planned to hold a meeting at which the delegation can report to the leaders of the textile industry, both executive and technical, at the Waldorf-Astoria on

Tuesday, September 21, 1948, at 3:00 P.M. (EDST)

While the ASA will make the arrangements for the meeting and bear such expense as may be involved, it seems appropriate that the technical societies and trade associations who named members to the delegation should be co-sponsors. I hope I may hear from you that the American Association of Textile Chemists and Colorists will join us in sponsoring the meeting.

Sincerely yours,
G. F. HUSSEY, JR.
Secretary

* * *

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

August 9, 1948

Admiral G. F. Hussey, Jr.,
American Standards Association, Inc.
My dear Admiral Hussey:

In reply to your letter of August 6th, I appreciate the invitation extended to the American Association of Textile Chemists and Colorists to join ASA and other associations which sent delegates to the ISO Technical Committee 38 meeting in England, as co-sponsors of a meeting with the leaders of the textile industry for the purpose of announcing and discussing the results of the Buxton conferences. Although the Council of the AATCC will not be in session in time to take action on this invitation I am certain that its decision would be to join you in this industry meeting as a co-sponsor.

At your convenience will you kindly notify me of the number of representatives from the AATCC who can be accommodated—and if there are functions which our association should perform to be of assistance to you.

Awaiting further word from you, I remain,

Sincerely yours,
H. F. HERRMANN
President

—♦ ♦—

Meetings, Research Committee and Council

ATTENTION is called to the meetings of the Council and General Research Committee which will be held on September 24th at the Hotel New Yorker, New York. These meetings were previously scheduled for a week earlier.

Meetings of the Research Committees will be held the day before, September 23rd, also at the New Yorker.

—♦ ♦—

Research Projects, Piedmont Section

THE EXECUTIVE COMMITTEE on Research announces that the Sectional Advisory Research Committee of the Piedmont Section of the Society under the leadership of Chairman V. B. Holland with members J. B. Neely, C. B. Ordway, L. C. Reynolds and R. H. Souther have arranged with Clemson College to have graduate students assigned to three projects of interest to AATCC. These projects are:

1. A comparative evaluation of the dyeing properties of normally rain grown versus irrigated cotton. In this project California irrigated will be compared to Mississippi Stoneville 2B rain grown.

2. Identical with number one except the cottons studied will be Arizona irrigated and Texas rain grown.

3. The effect of some variables on the dyeing of viscose rayon with vat and naphthol dyes.

Under numbers one and two, time permitting, rawstock, yarn and fabric dyeing will be studied using Jade Green and Blue BCS for the vat dyes and Naphthol AS-SW with Red B and Red KB Bases.

In number three the same dyes will be used. Temperature variations will be studied in the range from 120° F. through 180° F. in 10 degree steps. The effect of various dyeing assistants such as dextrines, glucose and glues will be determined. Variation in time of dyeing from 10 minutes up to 30 or more minutes is planned. Observations on pH and consumption of hydrosulfite will be recorded.

—♦ ♦—

South Central Section Survey

DR. RAYMOND SEYMOUR will, under the auspices of the South Central Sectional Advisory Research Committee, make a literature survey on pH Control of Dyeing.

—♦ ♦—

Visitors at AATCC Laboratories

RECENT visitors at the AATCC Laboratories at Lowell Textile Institute were:

Dr. Warren F. Busse
Technical Director, Institute of Textile Technology, Charlottesville, Virginia

D. Entwistle
Courtauld's, Ltd., England

Mr. Entwistle is a research expert on cellulose.

—♦ ♦—

September 10th Meeting, WNE Section

HECTOR C. BORGHETTY, Technical Manager, Auxiliary Products Dept., General Dyestuff Corporation, will speak on "Effects of Auxiliaries in Dyeing" at a meeting of the Western New England Section to be held on September 10th at the Waverly Inn, Cheshire, Connecticut.

Dinner will be served at 7:00 P.M. at a charge of $3.00 per plate and an informal reception will take place from 6 to 7.

National Meeting and Convention Augusta, Georgia, Oct. 21-23

Headquarters: Sheraton Bon Air Hotel

Exhibits at Augusta Convention

THE EXHIBIT COMMITTEE will have on display at the National Convention in Augusta, October 21-23, various pieces of testing apparatus used in the following fields:

Water Resistance

This display will consist of a Spray Rating Tester, a Hydrostatic Pressure Tester and a Rain Tester. The test procedures on each of these pieces of equipment will be demonstrated.

Light Fastness

The exhibit will include a Fade-Ometer, the standard machine for determining light fastness of dyed textiles. Samples and charts will be on display.

Wash Fastness

A Launder-Ometer for testing color fastness of dyed textiles to washing will be in operation as part of the exhibit. Many of the results of the present investigation on the importance of abrasion in wash fastness evaluation, as well as the various types of containers developed and tested during this research, will be on display.

Detergency

The Detergency Comparator, a machine for the laboratory evaluation of detergents which has every indication of being able to accurately predict plant performance, will be in operation. Sample pairs of knit tubing, stained with a standard soil, are washed under identical conditions and after rinsing and drying are compared by means of a reflectometer to rate the efficiency of the detergents under test.

Flammability

Equipment for measuring the speed of burning of textiles in general but more particularly pile fabrics and lightweight fabrics which tend to burn rapidly will be shown.

Fire Resistance

Fire resistance testing equipment as well as samples of commercially treated flame resistant fabrics will be on display.

Perspiration

Methods for testing the fastness to perspiration will be demonstrated. The new and improved plate method will be on display.

Insect Pest Deterrents

Equipment for testing the efficiency of insect pest deterrents consisting of a life-cycle cabinet in which uniform conditions of temperature and humidity are maintained will be on display.

Crocking

Three Crockmeters will be on display: the regular standard machine, the dual machine and a Shirley type machine, which in this case is a regular Crockmeter to which has been attached the various features introduced by the Shirley Institute of Bradford, England. Color Transference Charts which are used in determining the degree of crocking will be shown.

Members of the Exhibits Committee will be present throughout the Convention to explain the equipment on exhibition. It is highly recommended that you give close attention to this part of the Convention so that you may be more familiar with advances that have been made in laboratory testing equipment under the sponsorship of the AATCC. The following are the members of the Exhibits Committee:

Sherman A. Converse, *Chairman*
Research Director, Granitesville Company, Graniteville, South Carolina.

R. P. Timmerman, *Assistant Chairman*
Graniteville Company, Graniteville, South Carolina

William Agnew
Dixie Mercerizing Company, Chattanooga, Tennessee

L. L. Bamberger
Lanett Bleachery & Dye Works, West Point, Georgia

SHERMAN A. CONVERSE
Chairman, Exhibits Committee

Sherman A. Converse was born on March 12, 1902 in Woburn, Massachusetts where he attended grade and high school. In 1925 he received his BS in Chemical Engineering from Tufts College.

After graduating from college, Mr. Converse was connected with the DuPont Technical Laboratory, Deepwater Point, New Jersey and later was Overseer of Dyeing at Sibley Manufacturing Company, Augusta, Georgia. He then became Plant Chemist for Clearwater Manufacturing Company, Clearwater, South Carolina (1930-31) after which he returned to Sibley as Overseer of Dyeing and Finishing, and Chemist. In 1935 Mr. Converse became associated with the Gregg Dyeing Company, Graniteville, South Carolina as Dyer and Assistant Superintendent. After spending 10 years with Gregg, he became Director of Research of the Graniteville Company, which position he holds at the present time.

Mr. Converse married Miss Hilda Litchfield of Keene, New Hampshire in 1926 and has two daughters, Martha, 20 years old, who attends the Women's College of Furman University in Greenville, South Carolina, and Constance, 13, who attends the public schools in Aiken, South Carolina, where Mr. Converse makes his home.

Convention Theme: "Advancing Textiles through Research"

Alexander D. Campbell
Althouse Chemical Company, Chattanooga, Tennessee
J. W. Dooley
Marler Chemical Company, Cleveland, Tennessee
S. H. Williams
General Dyestuff Corp., Charlotte, North Carolina
S. M. McKeown
Sibley Division, Graniteville Company, Augusta, Georgia
W. M. Slaughter
USEO Division, Elm City Plant, Calloway Mills, LaGrange, Georgia
R. S. Stribling
Springs Bleachery, Lancaster, South Carolina
Carroll A. Reddic, Jr.
Southern States Chemical Company, Augusta, Georgia
William F. Thompson
Clearwater Manufacturing Company, Clearwater, South Carolina
Dr. Howard M. Waddle
West Point Manufacturing Company, Shawmut, Alabama
George P. Calloway
Avondale Mills, Sylacauga, Alabama

General Barton to Welcome Members to Augusta Convention

MAJOR GENERAL RAYMOND O. BARTON (Retired), Vice President in charge of the Industrial Development Division of the Chamber of Commerce of Augusta, Georgia, will make the address of welcome at the dinner honoring corporate and charter members to be held on Thursday night, October 21, at the Augusta National Convention.

General Barton was born in Granada, Colorado on August 22, 1889. He was educated in the public schools and the University of Oklahoma. He received his B.S. in 1912 from the U. S. Military Academy at West Point and took postgraduate courses in the Infantry, Command and General Staff Schools and the Army War College. He has had 40 years service in the Army, 38 of which were active and 2 retired. He was commissioned as a Second Lieutenant of Infantry in 1912 and has served through all grades from Cadet to Major General and commanded all Infantry formations from Platoon to Division. He served several times on the General Staff as Corps Area G-3, Division, and Army Corps Chief of Staff. He was an instructor at various service schools and Professor of Military Science and Tactics at Georgetown University.

General Barton's most outstanding service was his training and battle command of the 4th Infantry Division. He trained that Division at Camp Gordon in Augusta, took it overseas and landed it on Utah Beach, Normandy on D-Day, 1944. The general, himself, was ashore at 11:30 A.M. on that day. He and his Division were in practically continuous combat for the next 6 months. While the 4th Division's battle performance was continually of the highest order, the following operations were outstanding:

MAJOR GENERAL BARTON

The first ground troops ashore in Normandy were of the 4th Division.

They were first into Cherbourg, June 25th.

They were first in the July breakthrough near St. Lo.

They were first into Paris, August 25, 1944.

They were first into Germany and through the Siegfried Line in September.

Incidentally, General Barton was the first American general to set foot in Germany in World War II. His defense of Luxembourg during the Battle of the Bulge is perhaps the most outstanding performance of himself and the 4th Division. His DSM and Bronze Star Citation give him and his Division credit for saving the City of Luxembourg in that battle.

Toward the end of the war, General Barton was invalided home for physical disability incurred in combat and in 1945 this disability resulted in his retirement as a Major General. He has settled permanently in Augusta, where he trained troops during both World Wars. With him are his wife, his daughter and his son, a Second Lieutenant in the Air Force. He is President of the Georgia-Carolina Boy Scout Council, consisting of 18 Georgia and South Carolina counties.

General Barton has many campaign ribbons and decorations. Those awarded for his combat operations are: Distinguished Service Medal with Oak Leaf Cluster, Silver Star, Bronze Star, ETO Ribbon with Arrowhead and four campaign stars, French Legion D'Honneur Odre d'Officer, French Croix de Guerre avec Palme, Belgium Ordre de La Courronne avec Palme with Croix de Guerre avec Palme.

Intersectional Contest Committee, New York Section

WELDON G. HELMUS

Chairman, Intersectional Contest Committee
New York Section

WELDON G. HELMUS, Vice-President and General Manager of the Fair Lawn Finishing Company, Fair Lawn, New Jersey, is Chairman of the Intersectional Contest Committee for the New York Section. The contest will take place at the National Meeting in Augusta, Georgia on October 23.

Before his association with the Fair Lawn Finishing Company, Mr. Helmus was connected with the Textile Dyeing & Printing Company of America, Inc., Fair Lawn, for 15 years, as Assistant Plant Superintendent. When this plant was liquidated he went with the Research Department of the American Dyewood Company, Belleville, N. J. for a period of 9 months. When the Fair Lawn Finishing Company opened in 1940 he became Vice-President and also a Director of the company.

During the war Mr. Helmus was on the Advisory Committee of the War Production Board and also a member of the Nylon Technical Committee. He is a member of the AATCC Committees on Dimensional Changes and Gas Fading. He is Vice President of the Paterson, New Jersey Chamber of Commerce.

Other members of the New York Section Intersectional Contest Committee are:

H. P. Baumann
Allied Textile Printers, Inc.
F. S. Richardson
Waldrich Company
M. Eckhardt
Sidney Blumenthal Company

L. S. Thompson
General Dyestuff Corp.
R. J. DeWitte
United Piece Dye Works
O. W. Clark
Calco Chemical Division, American Cyanamid Company
C. Brubaker
Standard Bleachery & Printing Company

The title of the paper is "Preliminary Study of Variables in Padding" and will be presented at the Contest by Mr. Helmus. Dr. Herman E. Hager, General Dyestuff Corp., will be the New York Section representative on the judges committee.

—♦ ♦—

Intersectional Contest Committee, Northern New England Section

DAVID X. KLEIN

Chairman, Intersectional Contest Committee
Northern New England Section

DAVID X. KLEIN, Research Director of the Aspinook Corporation, is Chairman of the Intersectional Contest Committee of the Northern New England Section. The contest will be held in conjunction with the National Convention in Augusta, Georgia on October 23.

Mr. Klein is a native mid-westerner, having been born and brought up mostly in Milwaukee. He attended high school there and in Chicago and graduated with an S.B. from the University of Chicago in 1930. He commenced employment in dyestuff research with the Newport Company in Carrollville, Wisconsin, which company was purchased by DuPont in 1931. In 1938 the entire dyestuff plant and laboratory were transferred to Wilmington and Mr. Klein's research investigations were continued at the Jackson Laboratory in Deepwater, New Jersey. For approximately a year and a half, during the war, he was engaged in secret war work in connection with the Manhattan Project. In 1946 he accepted his present position. Mr. Klein has over 20 patents which relate principally to dyestuffs and intermediates.

Other members of the Intersectional Contest Committee for the Northern New England Section are:

Ernest R. Kaswell
Kenneth R. Fox
Albert E. Sampson
Frank J. O'Neil
C. Wendall Lever
John H. Skinkle
Elmer H. Rossin
Leslie Christison

The title of the paper is "A Spectrographic Study of Treated Textiles" and will be presented at the contest by Dr. Daniel P. Norman. Dr. Simon Williams will represent the Section as judge.

—♦ ♦—

New Research Committee

THE EXECUTIVE COMMITTEE on Research has accepted the New York Sectional Advisory Research Committee's request to set up a committee on "Evaluation of Dispersing Agents and Wetting Agents to aid in Dyeing Cellulose Acetate Specifically and New Fibers in General."

The chairman is Dr. E. I. Valko of E. F. Drew and Company, Boonton, New Jersey, and the other members of the committee are as follows:

Russell J. DeWitt
United Piece Dye Works, Lodi, New Jersey
R. G. Fiddes
General Dyestuff Corporation, 435 Hudson St., New York
L. H. Flett
National Aniline & Chemical Co., 40 Rector St., New York
Max Licht
Allied Textile Printers, Paterson, New Jersey
H. E. Millson
Calco Chemical Division, Bound Brook, New Jersey
H. G. Scull
A. M. Tenney Associates, New York
Dr. Paul Wengraf
Elmhurst, Long Island
John A. Zelek
Textile Colors Division, Interchemical Corporation, Fairlawn, New Jersey

The committee has already had a meeting, at which the following items of business were concluded.

1. Review of the formation of the Committee by the AATCC
2. Appointment of Secretary
3. Definition of Objectives
4. Preliminary Survey of Pertinent Literature
5. Outline of a Working Project.

Research Committee Highlights

WASHING

C. A. Seibert, Chairman

Working on attachments for use in Launder-Ometer to give test conditions more closely indicating commercial laundry practice.

Cooperating with American Standards Association to determine the American woman's viewpoint on service life of colored garments.

SMALL COLOR DIFFERENCES

Frank O'Neil, Chairman

New name suggested "Visual Aids for Evaluating Color Differences."

Will avoid expensive instruments which are not likely to be generally available.

1. Nature of color changes after test treatment.
2. Exploration of visual aids.
3. Selection and recommendation of specific devices.

NOTICE

To Local Section Secretaries

Please send your 1948-49 meeting dates to the American Dyestuff Reporter for publication in the Calendar

CALENDAR

PHILADELPHIA SECTION
Meetings: September 24, November 12, January 28, 1949 (Kugler's, Philadelphia).

NORTHERN NEW ENGLAND SECTION
Meetings: September 24 (Andover Country Club); November 19.

SOUTHEASTERN SECTION
Meetings: September 25 (Columbus, Ga.); December 4 (Atlanta, Ga.).

WESTERN NEW ENGLAND SECTION
Meetings: September 10, October 29, December 4, January 15, 1949, February 26, April 8, May 20.

NEW YORK SECTION
Meetings: September 24, November 19, January 14, 1949, February 25, April 1, May 6.
Outing: June 17.

SUB-COMMITTEES
Meetings: September 23 (Hotel New Yorker, New York).

COUNCIL
Meeting: September 24 (Hotel New Yorker, New York).

RESEARCH COMMITTEE
Meeting: September 24 (Hotel New Yorker, New York).

NATIONAL CONVENTION
October 21-23 (Sheraton Bon Air Hotel, Augusta, Ga.).

Panel Meeting

Northern New England Section
Andover Country Club, Andover, Mass., May 21, 1948

A PANEL MEETING of the Northern New England Section was held on May 21st at the Andover Country Club, Andover, Mass. with Henry D. Grimes acting as Moderator. Members of the Panel consisted of the following:

Thomas F. Malloy,
Strong Hewat Co.,
North Adams, Mass.
John B. Moran,
Warren Fabrics,
West Warren, Mass
Cyril J. Byron,
Barre Wool Combing Co.,
South Barre, Mass.
John N. Dalton,
Pacific Mills,
Lawrence, Mass.

A number of questions had been submitted in advance, screened, and presented to the board of experts for consideration for a reasonable period of time. The meeting proceeded as follows:

Moderator Grimes: The first question will be posed to Mr. Byron. It is a combination of four.

1. What benefit is a highly sulfonated castor oil in dyeing chlorinated tops?

2. Are all milling and chrome colors of inferior fastness to washing, when dyed on chlorinated wool fibers, as compared to normal wool fibers?

3. Is it true that chlorinated top, when dyed, seems to exhibit a greater brilliance than unchlorinated top?

4. Do you think that it is better to chlorinate wool top before or after dyeing?

Mr. Byron: Now, in regard to the first question, as to what benefit is a highly sulfonated castor oil in dyeing chlorinated tops, any answer I give regarding chlorinated wool will be based on the Harriset process which we use. By-and-large, there are about thirty chlorination processes in the United States today. We have never used any sulfonated castor oil on any of our chlorinated wools. However, I understand that some has been used to prevent harshness of the wool and also to act as a penetrant.

Panel of Experts for the Northern New England Section Meeting.

I'll now go to question No. 2.

In our own experience, we have not found that to be so. However, you have to make the right selectivity, as the chlorinated wool is in a heavy condition and will absorb the color much more rapidly than unchlorinated wool.

As to the third question: I would say that with the Harriset process, it has a slight tendency to bleach the top. We have seen other processes that have decidedly damaged the wool fiber, and have, in some cases, yellowed the wool fiber. For instance, if you were dyeing yellow with blue, it would have a tendency to green the blue.

The fourth question: Well, we have not cataloged or gone through all the dyestuffs to see if there is any effect with chlorination on the color itself. We feel as though we have more control of the shade by chlorinating before, instead of after, and just to illustrate chlorination, we have a little exhibit here that I want to show you. These are two garments (showing two sweaters); one is chlorinated with control and one is uncontrolled. The one on my left is the controlled and the one on my right is uncontrolled. They were both given five washes in an automatic washing machine. These sweaters started out the same size. And, here is the same garment after ten washings (showing two more sweaters). They started out the same size.

Moderator Grimes: I am surprised that they changed shades so much.

The next question, I am quite sure, will bring about some discussion. We point this one at John Dalton. What advantages has diammonium phosphate in acid and/or chrome dyeing?

Mr. Dalton: For fifty years, investigators have been working on the problem of explaining wool dyeing phenomena. The reason for taking such a long time has been due to a lack of knowledge regarding the molecular construction of the wool fiber. However, since the classical researches of Astbury and Speakman in England on the X-ray structure of the wool fiber, considerable light has been thrown on what does happen in the dyeing process.

In regard to the first part of the question, as to acid dyeing, I am going to assume that the question is referring to the so-called level dyeing acid colors. Diammonium phosphate has a pH of around 7; naturally, with the level dyeing colors, which do have low affinity for wool, a high hydrogen ion concentration is necessary in the dye bath to promote level dyeing and to increase the affinity of the dyestuff for the fiber, so I would say that diammonium phosphate is not suitable for dyeing wool with the so-called level dyeing acid colors.

However, it is of considerable value in the dyeing of the chrome and neutral

or milling types of wool dyes. These dyes consist of highly aggregated molecules in solution. The rate of diffusion of such large molecules in water is inversely proportional to their particle size. At the same time, these molecules have colloidal anions of relatively great electrostatic charges. Consequently, they have very high affinity for the wool fiber at temperatures well below the boiling point of water. They are highly attracted by the positively charged wool fiber in an aqueous solution.

In the dyeing of these dyes, diammonium phosphate may function as follows:

1. The pH of a 5 per cent solution is 7.85, at 65° F., and decreases to a pH of 7.3 at 212° F. and after 1½ hours boil, decreases to 5.78.

2. With its high pH, it provides additional hydroxyl ions which tend to neutralize any positive electrostatic forces on the wool fiber.

3. While it is so functioning, the dye aggregation is decreasing as the temperature is increased, and the rate of diffusion or of dyeing is increased as more available sites for adsorption are provided through the increased swelling of the fiber at the higher temperatures. Due to its slow rate of decomposition, with slightly increasing acidity, the rate of dyeing or diffusion is well controlled, while continuing the dyeing operation at as near the boiling point as possible.

Moderator Grimes: How does this work out, practically, and what are some of the practical aspects of it, in terms of level dyeing, for example?

Mr. Dalton: The way an investigator might work is to try out things, and see if they come out all right; then try to fit a theory to the practice. In the use of diammonium phosphate, you will obtain a good result, if you try it, and the above theory, of course, seems to fit the practice.

Question: Is the light fastness affected by the use of diammonium phosphate?

Mr. Dalton: I should say no.

Question: Does the use of diammonium phosphate take the place of chrome bottom dyeing, or is it used in that?

Mr. Dalton: It doesn't take the place of chrome bottom dyeing; it is an assistant in chrome bottom dyeing. It is also an assistant in chromate dyeing and in neutral dyeing.

Please remember, of course, that the dyeing assistant that you use depends a good deal upon the affinity of the dye for the fiber. Naturally, you wouldn't use a dyestuff that does not exhaust at a pH of 7, and use diammonium phosphate.

Mr. Lane: How does diammonium phosphate work in connection with package dyeing?

Mr. Dalton: I haven't any experience with that, nor have I heard anything about it. I know that in top dyeing, it works very well, in a closed machine.

Moderator Grimes: In a closed machine, will the pH drop as much as it does in open kettle piece dyeing, for example?

Mr. Dalton: I do not think there would be any difference in the final results.

Moderator Grimes: Is there any difference in the fastness to fulling with diammonium phosphate? Mr. Hale has asked that question.

Mr. Dalton: I would say off-hand that there would not be any difference.

Mr. Johnson: Where you have weaving imperfections does the use of diammonium phosphate in the chrome process eliminate to any degree chrome bottom dyeing? Has it an advantage over that?

Mr. Dalton: That is a good question. I have been waiting for somebody to ask that. I said that one of the advantages of controlling the dyeing rate with diammonium phosphate is that you increase the rate of diffusion and you decrease the aggregated size of the molecules and at the same time, you increase the swelling of the wool fiber, and increase the number of sites for adsorption.

Consequently, what we are all looking for in piece dyeing is to have the dye homogeneously distributed throughout the whole mass of the fabric, and also well penetrated. You can imagine that if you swell the fiber sufficiently, also decrease the aggregation and increase the rate of diffusion or adsorption, the conditions are ideal for getting penetration which does help to cover weaving imperfections.

Mr. Lane: Would you say the use of diammonium phosphate has any effect on the handle of the wool fibers, the harshness?

Mr. Dalton: I don't think the pH is high enough to affect it very much.

Mr. Skirr: What is the effect of the use of diammonium phosphate for shortening the dyeing cycle with chrome?

Mr. Dalton: I think that depends a good deal on the density of the fabric. Goodall, in England, advocates bringing up the temperature very quickly, because he has collected data, with some aggregated dyes, like Polar Yellow, where there isn't much adsorption, or the affinity is low up to a temperature of 65° C. Consequently, he figured that the time up to the boil was wasted, as far as the dyestuff in the bath was concerned. His researches then led to adding the dyestuff at the boil, which shortens the dyeing process considerably. However, success with this method depends upon the construction of the fabric. Theoretically it is all right as the fiber is being well swollen with the boiling liquor, and the sites for dye adsorption are increased. With the high pH of the diammonium phosphate, the dyestuff is held off at the boil, and the dyestuff is given plenty of time to de-aggregate.

A Student: Can diammonium phosphate be used in the application of red cotton dyes, and what role does it play?

Mr. Dalton: I have had no experience in that, but what I have said about the swelling of the wool fiber should apply to cellulose to a certain extent.

Moderator Grimes: We shall now move on to the next question, which is directed to Mr. Malloy.

Do you prefer a low or high initial exhaust in piece dyeing?

Mr. Malloy: I have always preferred a reasonably high exhaust, as I have found I have gotten a lot better and more uniform results. If you can boil a color for possibly a half an hour, and not have to make a large addition of acid, and if you can get it to boil in, say, a reasonable length of time, with very little dyestuff left after a half an hour to forty-five minutes' boiling, you have gotten a lot more uniform result and have had to boil it less time, in order to get level results.

If you should have a pretty fair amount of dyestuff to be exhausted, and then shoot the acid into the high temperature, I have always found I have had to boil them quite a bit longer than if they go on gradually.

Moderator Grimes: What about these two-hour boils and boiling slowly and bringing it up in an hour to 180? How about driving the colors on with sulfuric acid?

Mr. Malloy: This procedure is satisfactory for level acid dyeing colors. I don't think anybody would use milling colors in a piece dye with sulfuric acid. If you are choosing a level dyeing acid color, I would prefer to have a fairly high exhaust, without having to add an additional acid at a high temperature.

Moderator Grimes: Now, for John Moran, we have three questions.

In dyeing wool raw stock into which it is necessary to add a small amount of nylon to improve the tensile strength, must you add other types of dyes to cover the nylon?

The second question is: Can you tell us what colors to use to dye waste nylon fast to light and fulling in light shades?

The third question is: How does one detect different types of nylon waste, and what are they?

Mr. Moran: On light shades, it isn't necessary to use different colors, provided you choose colors that will go onto your nylon at the same time as the wool. However, it is not advisable to dye the nylon waste with the wool. Most of the nylon

wastes that are coming through now carry waxes and some of the softeners should be removed before the color is put on, to get the ultimate fastness in both light and washing operations. It is much safer to dye nylon separately.

As to the second question, at present I am familiar with three types of nylon waste, and they come in both de-lustered and the clear nylon. There is the Army waste, which usually is from parachutes; it has long, coarse fibers. Then there are the underwear clips and these always contain a high percentage of softeners. Then the clips from the manufacturers of stockings, and these always contain some resins, or waxes, and, in every case, to get the best fastness, both light and washing or fulling, you have got to remove these substances.

The colors that seem to work best for light fastness are some of the chromes, but you have got to keep the chrome to a minimum. The machine pressure is very rarely over five pounds. You swell the fiber to such an extent that penetration is not good.

You have to keep below the boil and never on the strongly alkaline side. All of the sizing compounds have to be removed so that the fiber is as near neutral as possible.

With chrome colors, you can go down to a pH of 5.5 and if you need chrome colors that exhaust below that point, you are just out of luck; you run into too great color variation, especially when you dye nylon with the wool. With nylon alone, you can go down a little further with the pH.

Mr. Linberg: Why does he keep his chrome at a minimum?

Mr. Moran: When you have an excess of chrome, it seems to form a lake in your dye bath, especially if you get little pressure in a closed machine, and that is deposited on the outside of the fiber.

Mr. Luce: I notice that certain acid colors exhaust very rapidly on nylon. Have you developed or do you know any retardant to slow the exhaust up on that?

Mr. Moran: You start off with ammonium acetate, and you never let the bath drop below pH 6. With most of the milling colors, especially when dyed alone, if the acidity increases, the colors may precipitate in the bath, probably due to the delustrant which may be titanium oxide; that is one of the reasons you get a rapid exhaust. The dye is on the surface of the fiber and it never penetrates.

Mr. Linberg: Which is easier to dye, the de-lustered or the bright nylons?

Mr. Moran: By all means, the bright nylons because people are not too fussy about what they deluster with sometimes.

Question: How do you get rid of the delustrant?

Mr. Moran: We don't.

Mr. Sandeman: I have two questions to ask you. How would you dye fast-to-light a very high-grade piece of a gabardine fabric containing 20 per cent of nylon? And why are the mills doing that?

Mr. Moran: To the first question, my answer is: I can't do it. And the second question, the reason they are putting it in is for strength. Some of the nylon wastes are a good grade of waste.

Moderator Grimes: The next question is posed to Mr. Byron. What is the effect of the fiber lubricant on the dyeing of worsted tops?

Mr. Byron: Well, being in a commission house, we get all kinds of lubricants and lubricating oils and emulsions. We are using lard mineral oil, and we have had no trouble.

However, with some of our knitting yarns or knitting tops that we get in, we have some difficulty with some of the fancy lubricants that some people have concocted. So far as we know, and speaking in generalities, we are not and have not heard of too much trouble with lubricating oils on any of the worsted tops.

Question: Is that because you are processing your top, what we would call "hot" in terms of the older days, when we used to store top for six months, or, has it been allowed to stand around long enough for the oils to oxidize?

Mr. Byron: The way the top situation is today, we haven't time to have it come out of the comb before getting it into the dye kettle!

Moderator Grimes: Mr. Dalton, we are posing this question to you. Have any advances been made in air bath agitation to expedite dyeing?

Mr. Dalton: I think that the question may be referring to an article published in May, 1935, in the *Journal of the Society of Dyers and Colourists,* by Randall and Thomas of the Imperial Chemical Industries, on the "Turbulent Dyeing of Wool Fabrics." The turbulence is promoted by air bubbling or vigorous ebullition at diminished pressure at 80° C. The increased rate of exhaustion and penetration was brought about by differential hydraulic and hydro-dynamic pressures on either side of the fabric, whereby a reciprocal pumping action of dye liquor through the fabric is induced. Also, vibrations and pulsations of the turbulent liquor resulted, which promoted the dyeing of the fibers.

I have been waiting to hear of a dyeing machine constructed, embodying the features mentioned above, but I do not know of any. Perhaps the war interfered with this development, but we should hear more from it.

I have also read one article on the investigation of this process where investigators reported that the ratio of the thickness of the fabric to the surface exposed, was a criterion for the successful turbulence dyeing of the fabric. In other words, in the case of felts, where you have a higher ratio than you would have on apparel fabrics, the results were much more successful.

I don't know whether anybody else knows of any further developments taking place with this process.

Mr. Durfee: Perhaps I should say something about that. At one time, experimentally, I had a very great success with the pulsating apparatus. With anybody who is sufficiently mechanically inclined, it is a simple matter to take something in the nature of this affair, and create a pulsating pressure with a rubber tube that will draw into the pipette, and squirt it out again.

Now, there is no great point in that, except that if you are experimenting in the laboratory with a difficult fabric, with a low temperature, on direct dyeing, then in that case, you can get excellent penetration merely from the fact that your liquor is moving around very effectively and you get different dyeing in that way.

It is rather difficult to do mechanically, but it works nicely.

Moderator Grimes: Was there any implication of air turbulence in that experiment, or was it a pulsation of the liquors?

Mr. Durfee: The machine was operated by air, because that was a convenient way to move the water; but, to avoid cooling the bath, the air was not introduced into the water. You can push it in and out, and it creates a great many currents, and saves you the trouble of stirring it around. As a matter of fact, at one time, I had a battery of five or six pipettes in the laboratory, all squirting in, and as I say, it is mechanically a little difficult to do it nicely and keep it in order.

Moderator Grimes: Has anyone had any further experience or carried out experiments on turbulent dyeing, according to the lines Mr. Durfee has just described?

Mr. Dalton: I would say that probably there is one advance that may be made, and that is in connection with the use of supersonic waves, which may produce a similar result.

Question: How does that work?

Mr. Dalton: I can't expatiate on that subject at the moment.

Moderator Grimes: The next question is directed to Mr. Malloy. Do you prefer acetic, formic or sulfuric acid in wool piece dyeing, and why?

Mr. Malloy: I think all three have a

place. If you have any colors that exhaust rapidly, naturally you would use the milder acetic acid. Also, in chroming, you wouldn't have any choice, you would have to use acetic acid. In exhausting the chrome dyes, I would prefer to use some formic acid. I think your shades become brighter and also, on certain types of colors like chromatrope, that needs a great deal of chroming to bring up the shade, I think that formic acid gives you a greater reaction there.

But on piece goods with acid dyeing, I prefer sulfuric acid. I have always found that they will level better; that is, if you pick out level dyeing acid colors, you get a more uniform dyeing than you will with acetic acid. That is my experience.

Of course, a great many people will differ on that, but we have always been partial to dyeing with sulfuric acid, for level dyeing with acid dyes.

Moderator Grimes: Here is a question relative to sulfuric acid, in acid dyeing. Do you prefer the level dyeing acid colors or the metalized acid colors?

Mr. Malloy: I like the metalized colors. Every dyer likes them, because they make the dyeing job easy, I think, and they cover up a multitude of sins. There are a lot of imperfections in the cloth that will show up with a chrome dye. But, when metalized colors are used, they have much more covering qualities, and I think you get a much more uniform and a better dyeing result with them.

Moderator Grimes: Would you care to discuss at all the relative merits of carbonized versus uncarbonized dyeing?

Mr. Malloy: Well, my personal feeling is that I prefer to dye carbonized goods right from the carbonizer, with the acid in them. I have tried pieces not carbonized, coming right from the dolly washer, and I have found a lot better results, more uniformity, with less shadiness and more solid dyeing, using the acid from the carbonizer.

Mr. Lillis: How does formic acid compare with sulfuric acid, as far as level dyeing goes on dyeing level acid dyeing colors?

Mr. Malloy: Well, I think you can get just as good results with the formic acid, but I think that it is more economical to use sulfuric acid. With most of the large mills, cost is uppermost in their minds, and it is much more economical to handle them from the carbonizer.

Mr. Lillis: Getting back to this cost business, do you believe a piece is stronger after it has been dyed with sulfuric or formic acid?

Mr. Malloy: I think that if you are going to dye metalized colors, they would be a shade stronger dyed with formic acid.

Mr. Lillis: Would that difference be enough to compensate for the increased cost of the formic acid?

Mr. Malloy: You would have to neutralize it; carbonize the goods first, and neutralize afterwards; handle them in a dolly washer.

Mr. Lillis: How about sodium formate for neutralizing?

Mr. Malloy: I haven't tried that, but from what I hear, I have heard some reports that it has been used, and they are having successful results with it. As to the strength, I don't know whether it is true or not, but the strength is increased anywhere from 15 to 30 per cent; using sodium formate in conjunction with the sulfuric acid in dyeing the metalized dyes.

Mr. Johnson: Is a fabric made of worsted carbonized before or after dyeing?

Mr. Malloy: I have always found that it is hard to regulate the shade. You take most acid colors: If you carbonize them, it is pretty hard to control your shades from lot to lot. You will get a variation there, and you will have more or less trouble in having off-shades in the goods. I have always found that I could get more satisfactory results, as far as the dyeing end of it is concerned, in carbonizing before dyeing.

Dr. Powers: I realize that it isn't done. But, why not use muriatic instead of sulfuric acid?

Mr. Dalton: I will try to answer that. One reason for not using it is that stainless steel equipment is highly corrosive to hydrochloric acid; that will eliminate it to begin with. Another reason according to the researches of Harris and Steinhardt is that chloride ion in solution has a lower affinity for the wool than the sulfate ion. Accordingly, you do not get dyeing equilibrium established as rapidly as you do with an equivalent amount of sulfuric acid.

Question: How does the fastness of metalized dyes compare with chrome dyes for light and perspiration?

Mr. Malloy: I think that as a group, the chrome dyes are faster. You might get a few combinations of metalized colors that will be as fast, and some not so fast; but as a general rule, the chrome dyes are faster all around.

Question: What is the comparative fastness to abrasion between the chrome and the metalized dyes?

Mr. Malloy: I am afraid the chrome dyes are going to be favored again on that.

Mr. Luce: In regard to metalized dyeing, do you usually add all your acid at the start or spread it along as you go?

Mr. Malloy: After carbonizing, we have a pretty low acid content, 3 to 4 per cent on the weight of the cloth. I always start with the medium shades without any acid addition at all. When it comes to dark navies and dark browns or anything else like that, I will add a certain small percentage of acid at the beginning.

Mr. Luce: I am speaking of uncarbonized goods.

Mr. Malloy: I have always found that it takes a lot more acid to dye uncarbonized goods than carbonized goods. I have always been able to dye metalized colors on carbonized goods with anywhere from 5 to 7 and 8 per cent acid.

Mr. Luce: You don't make any additions?

Mr. Malloy: No.

Mr. Luce: You add it at the start?

Mr. Malloy: Yes, that is right. But, on uncarbonized goods, I use 6 or 7 per cent to start with, and I add another 3 per cent to exhaust. You will find the dyes don't develop and penetrate as well, if they are not carbonized, unless you have a larger amount of acid.

We boil our metalized colors an hour and a half altogether.

Moderator Grimes: This question is directed to John Moran.

What causes light specks in carbonized all wool pieces and how can they be eliminated?

Mr. Moran: I wish I knew. However, a good many of the light specks that appear in the pieces that have been dyed previous to carbonizing are caused where the color has been destroyed from drippings on the top of the baker or from the guide rolls inside the baker. If one of the guide rolls is moving slower than its companions, it will pick up small amounts of dilute acid, and as this acid picks up, gradually it becomes more concentrated to the point where the droplets get big enough to fall on the goods.

Now, for this reason, there is no definite pattern to the spots, or marks, and in the case of white goods, they would show up as resist marks.

The only way to avoid it is to make sure that the guide rolls are all turning at the same speed.

Now, with the metalized colors, usually they cover up these spots; they do not show up as they would with the level dyeing acids or chromes. Or if they do show up, they don't show up to the same degree.

Moderator Grimes: The next question is for Cy Byron. In the matter of chrome dyeing, please state some points for and against the Top, Meta and Bottom Chrome methods.

Mr. Byron: The general trend seems to be going to the metachrome colors. Of course, they are limited as to their range. On the metachrome dyeing, you have more control of the color, inasmuch as

you can take samples during the dyeing operation and stop at any given point, whereas on the top chrome, you have no control of the color, until the color is finally completed, and then if the shade is off, you must make additions to the dye bath.

On chrome bottom work, it is a lengthy operation, taking anywhere from five to seven hours, but they are extremely fast, especially the anthracene blues, but everybody tries to duck them with today's labor market.

I would favor the metachrome colors but, as I say, we are limited as to their catalog of colors.

Moderator Grimes: John Dalton, will you tell us the answer to this question?

What is the reason that dyes affix themselves to wool, silk and synthetic protein fibers at different rates? Do these differences correlate at all with dye structure? Can you list classes of dyes which should yield maximum differences?

Mr. Dalton: Dyes affix themselves to wool at different rates due to the affinity of the dye for the fiber at various temperatures. The affinity is generally dependent upon the molecular configuration of the dye in aqueous solution. If the dye forms a non-aggregated solution in water and ionizes as a true solution, then its affinity for the fiber will be relatively low. Such dyes require an acid of the highest hydrogen ion concentration as the dyeing is promoted by such an assistant to satisfy the Donnan Membrane equilibrium. Such dyes are classed as level dyeing acid dyes.

If the dye molecules are highly aggregated, then the dyeing of the fiber probably follows a colloidal adsorption pattern, and due to the high electrostatic forces of the colloidal anions are easily adsorped by the fiber. The evenness and penetration of such dyes on wool are improved by controlling the rate of adsorption and also by providing as many sites for dye deposition as possible. This is produced by temperature, which increases the rate of diffusion of the dye particles by decrease of the aggregation, and by the swelling of the keratin colloidal complex.

By a control of electrostatic forces with a salt like diammonium phosphate, and an increase in temperature, swelling, rate of diffusion, non-aggregation and lessening of the dye affinity, may all be accomplished.

In regard to the molecular structure of the dye and its correlation with its affinity for wool, or aggregation in aqueous solutions, in general, and with some exceptions, an increase in molecular weight tends to produce molecular aggregation of the dye solutions. An increase of sulfonic acid groups in the molecule has the opposite effect; those in the heavier part of the molecule are more effective in this respect. If the sulfonic acid groups are as far removed as possible from the chromophoric group or from each other, the greatest non-aggregating effect is produced, and the dye solution will be more molecular.

Now, in order to answer the last part of the question: Can you list classes of dyes which should yield maximum differences?—I think you could go through the Colour Index, list dyes with their molecular weights and the sulfonic acid groupings, obtain their exhaust rates at various pH's, and when you have done all this, you might classify the dyes in various groups.

Mr. Powers: Assuming that you could take one dyestuff and apply it at the boil in more or less true solution with a strong acid, and then dye the same color at a lower temperature as a high aggregate, which method would give you the better fastness?

Mr. Dalton: There shouldn't be any difference in the fastness of the dye which is generally a function of the affinity of the dye for the fiber.

Moderator Grimes: Our next question is directed to Tom Malloy. What size of dye kettle do you regard as (a) the most economical for wool piece dyeing; (b) the best to produce the most uniform shades?

Mr. Malloy: As far as economy is concerned, I think the size of the mill would come into consideration there. I think that with a 6 or 8-string machine, it would be as economical as the larger machine, where you get 12 or 14. It takes a longer load, and the operator is held up quite a bit, before he starts; in order to get two loads a day, he would run into quite a bit more overtime than if you had two or three eight-string kettles; but, that is strictly according to the size of the mill.

As far as uniformity is concerned, I think that anywhere from a 6 to 8-string machine is about the best for uniformity. I think that as far as the steam distribution is concerned, an 8-string machine is small enough to get the maximum efficiency in steam distribution, and I think that is just about right for uniformity.

Question: What is the best liquor ratio?

Mr. Malloy: Well, a lot of the text books will advocate liquor ratios of 1 to 30 or 1 to 35; but, I prefer a more concentrated bath. I have found that I have had good results with the liquor ratios, say 1 to 20.

Mr. Dushame: Is metal or wood used?

Mr. Malloy: Metal.

Mr. Linberg: Is there any preference for the type of reel? Should it be elliptical, or round?

Mr. Malloy: Well, I don't know. I wouldn't have much preference in that. I have seen a good many of the machines that are being made today, and I know from James Hunter that where they have a reel very high and too far in the front, and you don't get enough drag in the pieces as a result of that, when you are washing you run into a lot of trouble and get the pieces tangled and you have trouble with friction blocks. I like the reel extended far to the back; then you have got a pretty good drag in straightening out your pieces.

Question: I should like to ask Tom his preference on tacking or open dyeing on piece goods?

Mr. Malloy: I prefer to dye most everything open, with the exception of gabardine or something like that, or possibly a broadcloth, which gives only a little trouble. Otherwise, on Shetlands, or anything like that, I prefer to dye them open.

Question: How long a piece can you dye? What is the maximum length of the piece?

Mr. Malloy: Well, 100 yards. I wouldn't go above 100 yards. We have tried 120 yards, and I don't think that you get as good results in going over 100 yards. You get the best results with 70 or 80 yards, although we have dyed 100 yards satisfactorily. However, if you go above 120, it is risky.

Question: What speed do you run?

Mr. Malloy: Anywhere from 40 to 60 yards per minute.

Moderator Grimes: Our next question is directed to John Moran.

Is automatic temperature control advantageous in all types of textile dyeing?

Mr. Moran: I would say "Yes" because as a rule, by the time you have the operator sufficiently trained to control his kettle at the desired temperature or water level, he is smart enough to get out of the dye house. (Laughter)

Moderator Grimes: We will shoot the next question at Mr. Byron.

In Army O.D. top dyeing and blending, do you prefer to match fairly close the government standard, exclusive of white, and do relatively minor blending to arrive at the exact shade, or do you prefer to have so-called base shades on the green, brown and yellow sides? If you prefer the latter, how many base shades would you consider, and what would be their approximate shade with respect to the standard?

Mr. Bryon: This is a tough one. We have worn out the railroads on the New Haven & Hartford, going back and forth to Washington and Philadelphia, on this very same subject. However, to date, we are getting our pieces through without

any trouble. We are running some of ours on the cotton system in the south; therefore, we have to dry-comb it. We find that with a dry-comb top, against a top comb in oil, the white has a bearing on the resultant shade.

We usually dye about three-quarters of our O.D., and then assemble the mix. From there, out, we make our corrections accordingly. We like to have three components. We have been ridiculed by some people, saying that they can get it with one. They start out with one, and they keep dyeing different batches until they have thirty or forty. However, we find that we have more latitude by having three components, and we like to keep them on the green, brown, and yellow sides, and we are in that fashion able to control our O.D. khaki.

Moderator Grimes: The next question is directed to John Dalton.

Explain why wool which is undyed darkens in shade, when boiled with Glauber's salt or plain water.

Mr. Dalton: Well, I shall try to answer it with plain water. Water is a weak alkali, and when wool is boiled in a weak alkaline solution, hydrolysis takes place, and the cystine linkage in the wool molecule is broken. When that happens, there is a loss in strength. Also, there is a liberation of sulfur compounds. If the wool has impurities, like iron, which most wool has, there will be a darkening of the fibers. This is analogous to the steaming of a wool fabric. When it is steamed, you give it a permanent set. If the fabric after steaming is allowed to stand in a stretched condition for a certain length of time, although the cystine linkage has been broken, new crosslinks are formed, and there is not as much of a loss in strength if you steamed the fabric and did not allow it to be stretched for a time under tension.

Moderator Grimes: The next question is directed to Mr. Malloy.

Which do you prefer as an assistant in wool piece dyeing? Calcined Glauber's Salt, Crystal Glauber's Salt, or brine solution, common salt?

Mr. Malloy: Well, I believe that I would rather have the Crystal Glauber's Salt, especially for light shades, pastel shades.

I think that you will find less impurities in the Crystal Glauber's Salt than you will in the Calcined Glauber's Salt.

Now, as far as the brine salt is concerned, we tried dyeing quite a bit of our dyeings with brine salt during the war; we were forced to do it. We got rather poor results. We had more surface dyeing, with brine salt. But, I have heard tonight, when talking to a gentleman here, that some work is being done on this matter, and that we were using too small an amount of salt to get good results, and that possibly that was the answer. From what I heard, the Research Committee has been working on this problem and have had good results with brine salt, and that we would have to use large amounts.

Moderator Grimes: The next question is directed to John Moran.

Reference has been made to brook water and its effect on wool dyeing during the spring season. Have you had any experience with brook water during the different seasons of the year, particularly on light shades and whites

Mr. Moran: Yes. It is quite difficult, without a system of filtering. What happens is that in the fall of the year, the trees shed, and the leaves come down through the smaller brooks into the larger brooks, and finally into the mill pond, and they settle on the bottom. The effect of the tannic acid from the leaves, especially the oak and somewhat the birch leaves, isn't too great until the ice forms. Then, if the mill pond is, let us say, 40′ deep at the point where it is coming into the mill, it will probably have 18 inches of ice. Therefore you are getting down into the low level where the deposit of leaves is built up.

The only way I know to overcome this tannic acid stain on samples or on special sets without a filtering system is to dye a piece or two pieces in the bath you are expecting to use, and remove the pieces from the bath; then use that liquor to dye the set that is a special set.

Moderator Grimes: Vat dyes are now being successfully used in the dyeing of worsted top. How can that procedure be modified to serve the worsted piece dyer?

Mr. Byron: We probably pioneered in the dyeing of vat colors on worsted tops, and I think as far as regarding the dyeing of piece goods is concerned, what information we accumulated at our plant has been passed on to two of the leading dye concerns who manufacture vat colors.

I recently attended a meeting in Rhode Island, and one of these concerns gave a talk on the dyeing of vat colors; they had the piece goods with them. Whether or not these were sample pieces or production runs, I am not qualified to state, but I think that vat dyes can be applied very readily to piece goods.

Moderator Grimes: John Dalton, is there any chance of developing completely fugitive throwster tints?

Mr. Dalton: I wouldn't say there isn't any chance; nothing is impossible. We do now have fugitive tints, but there are three factors that have to be taken into consideration in using a tint.

For instance, you must consider where you wish to apply the tint, the twist of the yarn, the fabric construction and the process of wet finishing the fabric.

Certain pigment tints can be used under conditions which satisfy these particular requirements, and you don't have any trouble. On the other hand, if you have a crepe fabric, made of highly twisted yarn, and you put a pigment tint on the yarn, you are going to have a good deal of difficulty in removing it.

On the other hand, consider the so-called level dyeing acid dyes as tints; these dyes, due to the wet finishing processing or the yarn conditioning operation, are very apt to be set in the wool fiber and partially dye it and consequently you have a very difficult problem, when you want to dye pastel shades on such a fabric.

Some years ago, we thought we had an ideal tinting color. Acid Magenta is de-colorized by alkaline solutions. We thought we had a beautiful tint, but we found out when it went into the acid dyeing bath that the color had been reduced to the colorless leuco form and was oxidized back in the acid dye bath.

A tint like that would be ideal if it was satisfactory. Level dyeing acid dyes are well liked because they don't interfere with yarn manufacture or spinning processes, where the size of the pigment may interfere with making an even yarn. If we could have such dyes of a very fugitive character, it certainly would be a boon to the present-day worsted manufacturer, who is completely dependent upon fugitive tinting for economical production.

Moderator Grimes: The next question is for Mr. Malloy. How would you avoid layer wrinkles and shadedness on a 16-ounce steam-finish, all wool broadcloth?

Mr. Malloy: I think that you would have to start in the wet finishing, on that. You would have to use precautions all the way through. Also, do not let them lay any length of time in the scouring machine. And after dyeing, see that they are transported right to where you are steaming them, and as soon as you steam them, instead of laying them flat fold, roll them down and let them stand and set for two or three hours, and by doing that, possibly you would eliminate it that way. A friend of mine could answer that a lot better than I could. Mr. Stair could you help us out on that?

Mr. Stair: The most important thing is to keep your cloth on rolls as much as possible.

Any wrinkles that come into the cloth in the dry state could readily be steam-brushed out. When they appear in the wet state, from laying flat, they are difficult to remove.

Textile Technology in Perspective*

JOHN F. WARNER

President, Riegel Development Laboratories, Inc.

THIS is one time when I do not have to say that it is a privilege to be here. All of us in the AATCC are personal friends, and I believe that I know almost every person in this room tonight, so I will merely say that it is certainly fine to see so many old friends again.

However, the fact that you are old friends does not mean that I am going to give you the same old story. I have been privileged to talk to the Association about a number of subjects at past meetings. Usually these subjects had to do with some specific topic about which it was alleged I know something. Therefore, having covered the trees on previous occasions, I am now going to try to cover the forest.

Most of us attend meetings of this kind in the hope that we will pick up some information of particular value to us. We come together to discuss our mutual problems and to help each other directly or indirectly in their solution. For the most part, our daily lives are taken up in the continuing quest for answers to specific problems. We are, in other words, concerned with a tree or a few trees and as a result, we are prone to lose sight of the forest in which the trees are located. The significance of the forest as compared with the trees in it is sharply focused in several ways today.

Research and development have gone through a prosperous period along with the entire textile industry. During the next few years, when times may not be as good as they are today, management is likely to disregard this or that specific achievement—in other words, those two or three trees—and ask about the over-all effect of research and development—the forest.

In a similar manner, the European Recovery Program, in which the textile industry will play a substantial part, will be judged not alone by the mass of goods provided by this country, but also on their other characteristics, their quality and their color, and how well they hold their color. A bolt of our cloth in Italy or in France or in the low countries or in Scandinavia will be not merely another sale of goods but, more importantly, will be one of the practical symbols by which the democratic system will be judged as against the system of communism. So, the forest *is very* important to us at this time.

Perhaps we can get a further perspective on ourselves by looking back. We do not have to go way back to the days of Samuel Slater and his famous mill built in nearby Pawtucket in 1793, or to the days of the ring spinning frame of John Phillip in the city of Providence in 1828, or even to the migration of a substantial portion of the industry to the southern states. Research and development were unknown in the textile industry in those days. A few companies in textiles and related fields pioneered our way at the beginning of this century. It was not really until just before the World War that research took on much stature. Between the wars advances were made but nothing like the horizon before research and development today. For every thousand dollars expended on research in textiles prior to 1940, a million dollars is being spent today, according to Dr. Claudius Murchison, president of the Cotton Textile Institute.

The textile industry is in its greatest era of achievement in terms of production. The textile industry employs one and one-quarter million persons, and ranks second only to the iron and steel industry in this country in total number of people in the field. Textile manufacturers alone employ four hundred seventy thousand people. There are now twelve hundred mills stretching mostly from New England to Texas and they use mountains of raw materials, nine and a half million bales of raw cotton alone in 1947, to produce billions of square yards of fabric annually.

The thing that surprises me most about the history of the textile industry is the fact that it could come so far a ditsance from the days of Samuel Slater with so little research and development.

The place of research and development in the textile industry is securely established. No young man interested in textile research needs to go west for an opportunity. We need only recall the advances in colorimetry alone, which lead to the linking of science and industry with an interrelated color language, color definition, and the establishment of a color system. The advances in color matching which are following through the medium of color standards, through spectrophotometric and colorimetric determinations are examples of the comparatively recent progress that research and development have made in the textile industry.

Most of the advances in textile research and development have resulted from organized, cooperative effort. This is the recognized pattern of science and it applies to problems and their solutions in the textile field no less than in other fields. Organized cooperative effort implies a cumulative effect of the work of at least several individuals. Someone states a problem, another runs chemical and physical experiments and tests, another tries out the results at the practical level and then the production and sales staffs take over. A tortuous process, isn't it? No wonder so much of our work that looks promising never turns out as we had hoped. In this process, however, each person concerned has a job to do well in order to assure success. That is why organized, cooperative effort fosters rather than frustrates individual initiative.

Of course, there have been a few instances of spectacular industrial advances by a single technical man. These are rare and becoming rarer. The trend is toward much greater cooperation, not alone in the work of two or three in one company, but already in the work of 10 to 100 persons in one company, and in the direction of inter-company cooperation—the way all of us work with the chemical companies, for example, in a combined effort to lick a problem.

With great horizons before us, with the trend toward cooperative effort, research and development need ways in which to apply personnel and equipment to the problems at hand. This means planning and organization within each company in the textile and allied fields.

Advances in textile technology are the joint responsibility of both management and the technical men. Research and development require the capital which is controlled and administered by manage-

Presented at meeting, Rhode Island Section, April 23, 1948.

ment. Results come from the judicious investment of capital on the part of management and from the initiative and ingenuity on the part of those with the scientifically trained minds—the chemists, the physicists and the engineers.

Let us face one fact. Management will continue to control our destinies. All we can hope to do in setting our courses is to keep management constantly aware of our work so that research and development become and remain a part of management's habit of mind. Then, we can do our jobs with less fuss over budgets and personnel and less interference with our operating plans. Norman Shepard of American Cyanamid, one of my best friends, has said that "stop and go" research, "red light, green light" research doesn't go anywhere. I am sure we all agree with that. Keeping management informed on research and development is the best way to prevent it.

With management's cooperation, facilities (that is, space, a separate building perhaps, and equipment) become a reality. Obviously, facilities, while of very great importance, do not make a research department. People make the department. You remember I indicated that research and development are tending to become more of an organized cooperative effort which requires planning and organization within each company in the textile and allied fields. We are now at the core of that statement—people.

A successful research and development department should be an integral part, not an appendage, of the company. The department head should be reasonably autonomous, on an equal footing with the other principal department heads. He should have a voice in the affairs of the company through membership on the board of directors. This man *must* be research minded. Naturally he needs adminstrative ability and a capacity for getting along with people but his training and experience in scientific methods are essential for him to make research policy decisions. He is the man who is looking at the forest as well as the trees.

Under the department head should be a research director and his assistants. Their jobs are science. They need have virtually no administrative duties to take their minds from the specific problems at hand. Administration—facilities, personnel, salaries, etc.—is the department head's job. While the department head should be located at the company's principal office, the research director and his assistants should certainly be located on the job at the company's laboratories. The department head and the research director must have a good working relationship and be willing to give and take each other's advice on everything from salary raises to the research pattern for the year. But the research director and those under him should be looking mostly at the trees rather than the forest.

Under the research director, laboratory heads are next in line in the plan of organization. The research director should give them as free a hand as possible in the responsibility for the work under them. The laboratory heads in turn have section heads responsible to them. The most successful section heads are those who continue to be experimentalists themselves. They are next to the technicians every day.

The kind of organization I have just described is now a part of a number of companies in textile and related fields. For example, DuPont has followed this principle for years, American Cyanamid follows it. In the textile business there are a number of leading mills with similar set-ups. Among them is Riegel.

Research and development on such an organized scale are relatively new to Riegel. Riegel Textile Corporation created a subsidiary company, Riegel Development Laboratories, Inc., to study a variety of aspects of textile chemistry and fabric development in elaborate and modern laboratory facilities at Ware Shoals, S. C. The facilities include a well equipped laboratory and a modern pilot plant, each in its own building.

The pattern of work and administration of the organization are the responsbilities of Riegel Development Laboratories top management. At Ware Shoals there is the director of the laboratories and pilot plant and the textile engineer in charge of the pilot plant. Under them are the respective section heads and technicians.

The laboratory department does the development work. Its staff is abreast of the research done by the universities and textile institutes. This research is applied to Riegel's problems in a continuing search for better textiles.

The pilot plant, for example, makes tests of fibers, yarn and fabrics, and of weaving, slashing, spinning and fabricating processes. It is the practical proving ground for the new developments which have been evaluated by the laboratories. Fabrics or processes, developed or tested successfully in the pilot plant, are then ready for full consideration in Riegel Textile's Mills at Ware Shoals, S. C. and Trion, Ga.

Perhaps this one case history sharpens the pattern of what the research and development side of a company can be like. All of us know of concerns that have engaged a textile engineer or technologist and then left him alone, entirely alone, to come up with world shaking discoveries. This solitary technician may have a helper or two, some test tubes and a bunsen burner in several square feet of floor space in a corner of a mill. No matter how conscientious such a technologist may be, he is beaten before he starts by lack of organized, cooperative effort.

There is a vast reservoir of scientific knowledge untouched by textile technology. The amount of scientific knowledge already available and waiting for application to the textile industry is doubtless greater than all of us now in textile research and development could cope with in a generation. This knowledge is available to us through pure research in many fields and in many places.

There are indeed countless problems immediately before us in the field of textile research and development. When we consider the separate problems each of us is now studying—the trees in our forest—it is sometimes difficult to see all of the forest itself.

Our work, nevertheless, is most significant in terms of the national interest, in terms of the history of our industry and in terms of the practical planning and organization of research and development toward greater organized, cooperative effort. This is the forest. We need a glimpse of the forest now and then. We can get it by thinking of the application of our daily tasks to the progress of a great and important industry serving human needs throughout the world.

And so my remarks may be summarized very briefly by saying that we are each, naturally and properly, concerned with our individual problems—the trees—but that none of us should lose sight of the forest.

Chemist Positions With Federal Government

THE Federal Government announces positions for chemists in the vicinity of Norfolk and Portsmouth, Virginia at salaries ranging from $3727 to $6235 per annum. Further information can be obtained from the Recorder, Board of Civil Service Examiners, Norfolk Navy Shipyard, Portsmouth, Virginia, announcement number 4-33-12 (1948).

Meeting Dates, New York Section

THE following dates have been selected for the meetings of the New York Section for the 1948-49 season: September 24, November 19, January 14, 1949, February 25, April 1, May 6 and June 17 (outing). The September 24th meeting will be held at Kohler's Swiss Chalet, Rochelle Park, New Jersey.

Textile Analysis by Infrared Technique*

PHILIP SADTLER

Samuel P. Sadtler & Son, Inc.

Abstract

The Infrared Spectrophotometer is one of the newer instruments of chemical physics which has been applied to chemical analysis for control and for research. Infra-red analysis is applicable to anhydrous samples that are transparent to infra-red light. These include gases, liquids and solids. Solids may be dissolved in a solvent or made into a film. Most pure commercial, and mixtures of, organic compounds may be examined in this manner. Finishing and process chemicals may be extracted from textiles, and examined by this method. Chemicals purchased for use by the textile industry may be examined, as well as the completed textile fabrics. Fibers which will go into solution, films, finishes, dyes, oils, solvents, plastics may all be studied. The spectrogram obtained is a composite of all the elements of structure in the compound or mixture. Although impurities are undesirable, they are not always detrimental to infrared studies.

TEXTILE research and control has been turning to some of the newer methods of chemical analysis, based to a growing extent on the application of physical methods. In the past few years the importance of chemical analysis has been greatly increased. Analyses are used in control for the purchase and sale of materials; for the control of manufacturing operations; and for research. Analysis supplies the figures so that the research worker and the quality control man can tell in which direction he is progressing.

Some of the new instruments of chemical physics which measure chemical properties by physical means, are the Infrared Spectrophotometer, the Visual Spectrophotometer, the Ultra-Violet Spectrophotometer, the Electron Microscope, X-Ray Diffraction apparatus and the Mass Spectrometer. Both the Infrared Spectrometer and the infrared Spectrophotometer are used for making infrared measurements. The Infrared Spectrometer is an instrument used for determining the wave lengths of Infrared light after it has passed through the sample being measured. The Infrared Spectrophotometer is essentially the same except that it is also a device enabling the intensity of two beams to be compared at any given part of the spectrum.

I wish to speak mainly about the Baird Infrared Spectrophotometer. (See Fig. 1.). This is a double-beam instrument in which two beams are so balanced that in the absence of test samples a uniform 100% transmission is plotted. The double beam is made by taking infrared light from two points 135° apart on a silicon carbide glo-bar operating at 1100° C. When a sample is placed in one beam, the absorption is due to the sample plotted on a chart. In the second beam a reference sample may be placed when allowances are to be made for any similarities between absorptions in the two beams of light. Thus, if the sample cell contains material dissolved in a solvent, the same solvent in the reference cell cancels the effect of solvent in the sample cell. (See Figs. 2, 3 and 4).

* Presented at meeting, Philadelphia Section, February 27, 1948.

The word "Spectro" in the title "Spectrophotometer" means that the beam of light has been resolved into its spectrum by a prism or by a grating. In this case the resolving is done by a prism made of sodium chloride. It is approximately 5" x 5" x 4". The prism may also be made of other salts such as potassium bromide, calcium fluoride or other appropriate inorganic substances which do not absorb infrared rays. Glass, quartz and similar refractory materials do not transmit sufficient infrared light to be used for this work.

The spectrum, after it has passed through the prism, is measured by the temperature change indicated on a Bolometer. This energy is then amplified and recorded on a chart.

There are several ways of preparing samples. They may be in gaseous, liquid or solid form. Gaseous samples are of small interest to the textile research worker; however, he may be interested in the fumes in a room or the fumes given off from a reaction; or may wish to make periodic analysis of heating gases. Infrared does this more simply than most other

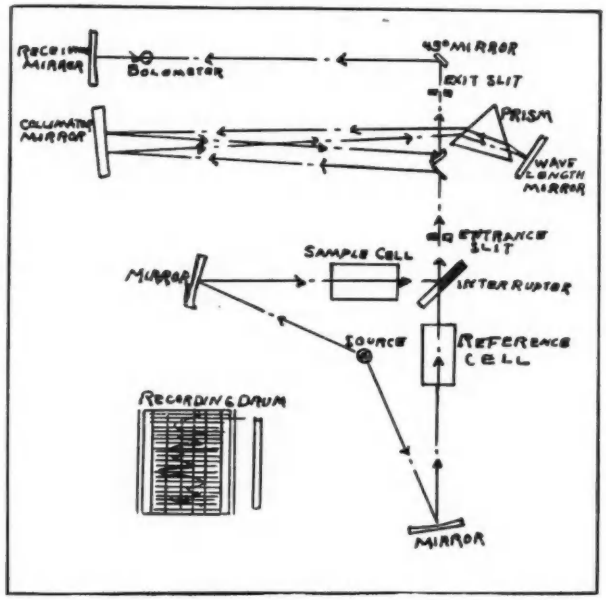


Figure 1. Optical and Working Parts of Baird Associates' Infrared Recording Spectrophotometer.

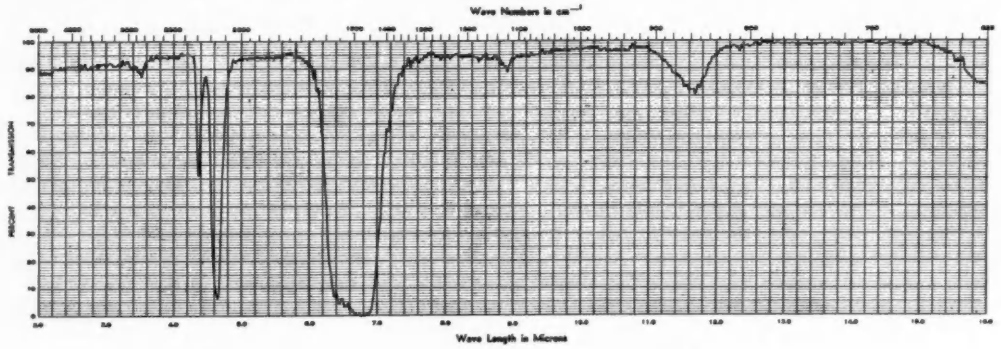


Figure 2. Infrared Spectrogram of Carbon Disulfide.

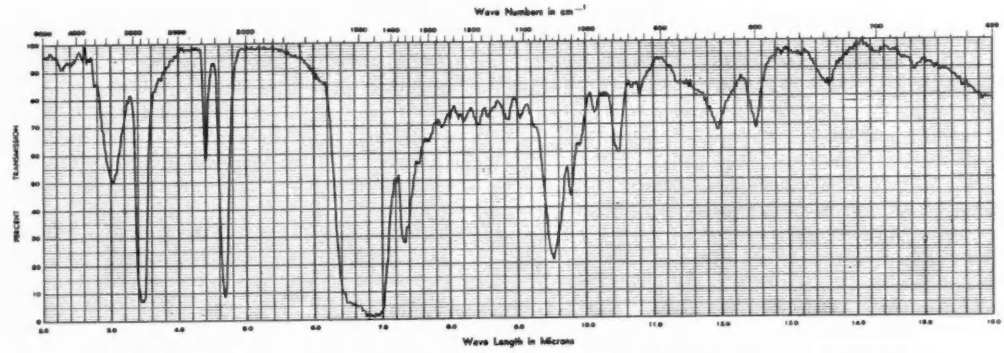


Figure 3. Infrared Spectrogram of Carbon Disulfide Mixed with Chlolesterol; Compensating Cell Blank.

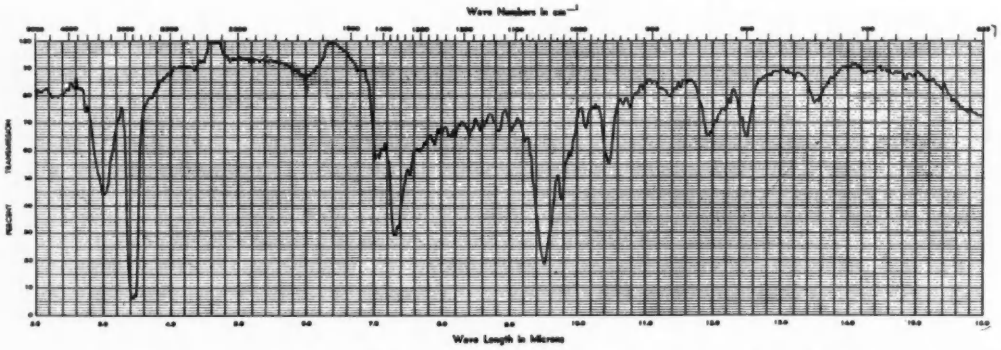


Figure 4. Infrared Spectrogram of Cholesterol in Carbon Disulfide, Referred to Carbon Disulfide in Compensating Cell.

methods. The cell used for gaseous measurements has two windows made of the same material as the prism. The gas may be kept under pressure above or below atmospheric.

Most of the samples to be investigated by textile chemists will be in the liquid form. Many solid materials may be dissolved in a solvent and examined in the liquid state. To make a spectrogram of an organic liquid a few drops are placed in the sample cell. If a solvent is used in this liquid, the solvent is also placed in the reference cell. The cell consists of two optically flat pieces of sodium chloride separated by a thin spacer which may be 0.01 millimeters to 0.4 millimeters in thickness. The salt windows are held together by a steel frame. The thickness of the spacer is the thickness of the sample, which is varied according to its composition. Generally alkyl hydrocarbons are examined in a thicker cell than aromatic compounds. The thickness of the sample also depends upon your interest. This may be in small amounts of impurities, so you increase the cell thickness to develop the spectra of materials in low concentrations. The liquid may be any organic liquid which has been made anhydrous. It may be a sizing material which has been solvent extracted from a textile, it may be a residual oil which does not scour off cloth, or it may be a liquid as received. The purity required of a sample involves the nature and kind of impurity. One percent of benzene in 99% of mixed octanes is more noticeable than 1% of mixed octanes in 99% of benzene. The reason for this is that in mixed octanes there may be as many as 18 isomers with the CH bonding at 3.4 microns common to all, and otherwise the structure varying from compound to compound, all lending little structure to the whole.

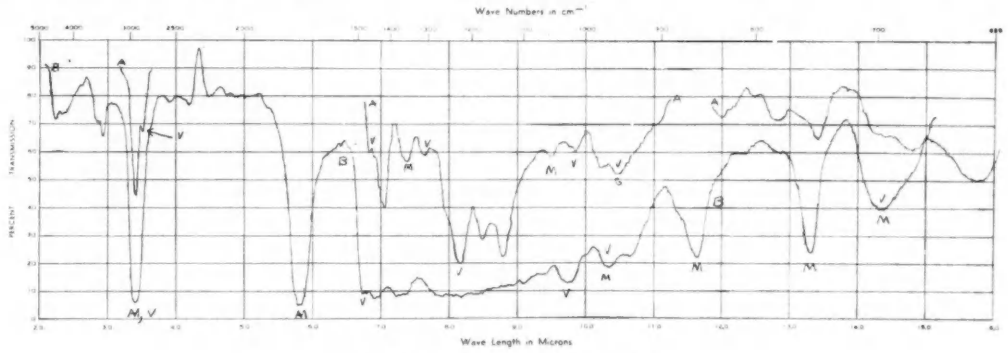


Figure 5. Spectrogram of Mixed Plastics.

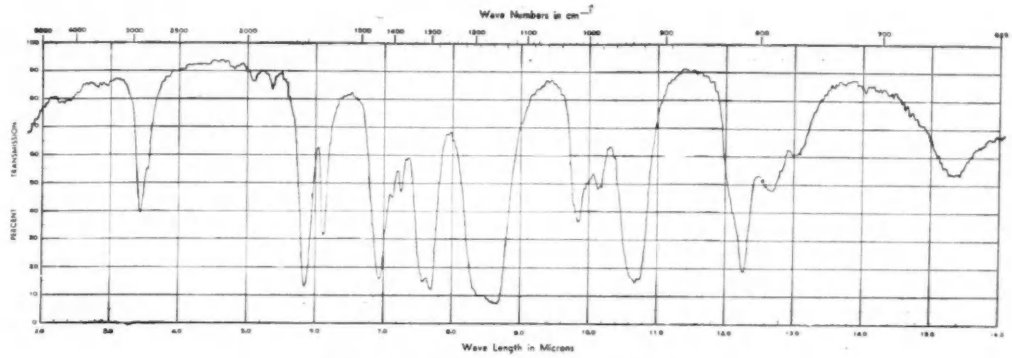


Figure 6. Spectrogram of Ethyl Methacrylate.

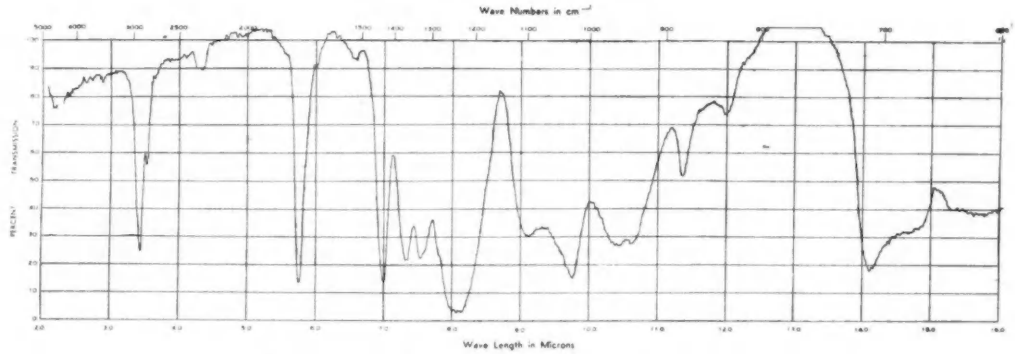


Figure 7. Spectrogram of Vinyl Chloride-Acetate Copolymer.

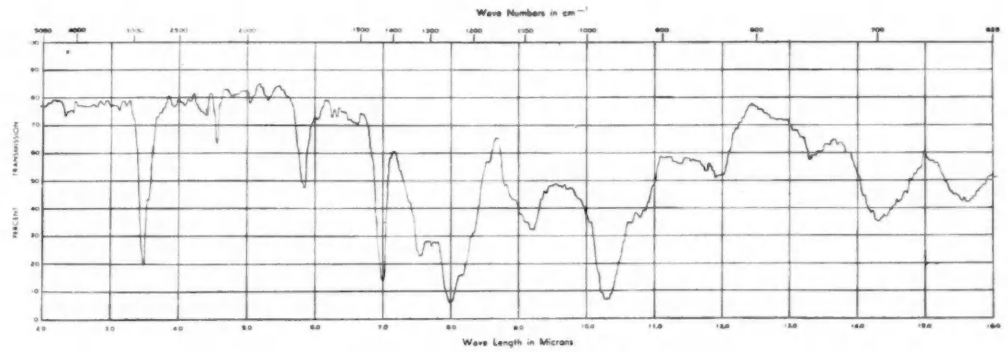


Figure 8. Spectrogram of Vinyl Chloride.

The structure of non-polar aliphatic hydrocarbons is generally weak, while the benzene structure is very strong and pronounced.

Solid materials may be run in several ways. If the material is in a film form it would be run directly, or the solid material may be dissolved in a solvent and run as a liquid, or it may be cast into a film, or it may be crystallized from solution on a rock-salt plate. An additional method is to suspend the solid material in Nujol. The Nujol method enables us to take a textile fiber such as cotton, linen, acetate, or rayon, suspend it in Nujol, then pass the infrared rays through and make the recording. On two samples of the same fiber treated in this manner, one with a plastic finishing material and the other unfinished, the difference can be shown. I have taken paper treated with paraffin wax, and run the spectrogram of the paper. The same can be done for very thin cloth. If the cloth is too thick, the amount of light refracted by the cloth will be so intense that only a zero absorption spectrum pattern will be made. Sheer cloth may be treated with paraffin wax, micro crystalline wax or Nujol. The treatment should take sufficient time to penetrate the fibers completely.

The spectrograms of polythane and microcrystalline wax show considerable similarity. This is to be expected as they are both saturated hydrocarbons. In the region of 10 to 25 microns they will show considerable structure.

Identification of finishing materials may show a mixture of several plastics and their plasticizers. In one case a chemist presented us with a finishing material which he thought was a mixture of methyl-metacrylate and vinyl-chloride-acetate co-polymer. I made several spectrograms, first of the finished material (See Fig. 5); second of the ethyl-methacrylate, (See Fig. 6); third, of the vinyl-chloride-acetate co-polymer, (See Fig. 7); fourth, of vinyl chloride, (See Fig. 8). From the absorption bands of the material in question, I was able to show that every absorption band belonged either to methyl-metacrylate or vinyl-chloride-acetate co-polymer. Various vegetable oils can be identified in a conclusive manner. For instance, true olive oil has a different spectrum from other oils often substituted for olive oil, such as peanut oil. If an oil normally working well behaves in a peculiar manner, it may be interesting to study the spectra. There may be additional absorption bands which may tell us, for instance, that the change has been oxidation with formation of aldehydes, alcohols or fatty acids. The same kind of investigation may be made of a processing oil which will not scour from the cloth. Plastics may be examined to show the plasticizer and its identification. Identification of the fatty acid and of the oil in emulsifiable oils also is practical.

One can identify the wetting agent used in the newer detergents. A very interesting study can be made on dyes to ascertain if a commercial dye contains the exact compounds supposed to be in the dye. A spectrogram is made of the pure dye and a spectrogram of the commercial material. If the two match, they are the same; if they do not match, it is possible to tell that an adulterant has been added or a substitution has been made. Heretofore it has been a tedious operation to identify the compounds in any particular dye, and dyers have generally been satisfied with the color of the finished material.

Every absorption band has a definite meaning. The absorption bands are caused by the absorption of the infra-red light in vibration of the natural frequency of the organic molecule. The vibrations take place at various frequencies depending on the type of structure. Thus the OH in alcohol will vibrate in several ways, where the O and H join and where the OH joins the C. The depth of the absorption bands is an indication of the quantitative amount of compound present. Infra-red makes possible, for the first time, studies of relation of location of absorptive groups to definite characteristics of dye color, odor, taste, moth-proofing, mildew-proofing, etc., the structures of which have not been well understood. Data is being filed in our laboratory by placing the spectrograms on 18 inch key-sort cards. The top is punched for the location of the absorption band, the bottom for a reactive group, while the ends are free for special studies.

To make a quantitative measurement, standards are made in several different concentrations. If the compound follows Beer's Law, $I_v/I_{ov}=e^{-k_v cx}$, in percent transmission for the various concentrations converted to optical density the optical density will form a straight line, passing through zero for zero concentration. The unknown optical density is compared with the chart, reading the percent concentration directly.

The infrared technique is very useful in distinguishing the presence of various isomers. For instance the moth-proofing insecticide, benzine hexachloride, is generally best analyzed by the infrared technique, measuring the absorptions at 11.8 microns or 14.53 microns for the gamma isomer. In a study of para-dichlorbenzene the ortho and meta isomers are spotted. This is helpful in purification studies, as when the absorption bands related to the ortho and meta positions are eliminated, the compounds have been removed. While in the removal of by-products the loss of para-dichlor-benzene may be noted so as to improve the yield.

Every reactive group has an absorption wave-length. By "reactive groups", I mean such groups as OH, aldehyde, carboxy, chloro cyano, diazo, hydrazil, methyl-methoxy, nitro, phenyl, and hundreds of other groups. For instance, isopropyl can be distinguished from propyl, a dextro-rotatory from a levo-rotatory, a cis- from a trans-isomer, a meta, ortho, and para position may be differentiated. In methyl alcohol, CH_3OH, the bond for oxygen is shown as an OH bond, a C-O bond, and in most molecules the bonding shows up several times, either where the atoms are bonded to several other atoms or as over-tones. The benzene ring, for instance, is also shown as the benzene ring overtone and appears at least four times. Unsaturated groups are shown as the ethylenic linkage, the vinyl, the vinylidine, acetylene, conjugated and non-conjugated unsaturated groupings. There are possibly a thousand such groupings that can be used for classification. Any system of classification must have considerable compromise to reduce these groups to a working number.

By following a particular absorption band, such as an ethylene unsaturation, it is possible to follow a reaction by taking samples out during the process and watching the disappearance of this group. When that group has completely disappeared it is known that the reaction has gone to completion. It is also practical to follow the development of an absorption band to show the addition of the reactive group.

The possibilities of infrared analytical technique are tremendous, particularly as it will supply answers that were frequently impractical previously. It is a trustworthy method when everything is in order.

EMPLOYMENT REGISTER

48-9

Education: B.S., Bates.

Experience: Woolen mill chemist; miscellaneous testing, demonstration and development work on all fabrics for supply houses, as head chemist.

Age 41; married; references.

48-10

Education: B.T.C. Lowell Textile Institute, 1942.

Experience: Captain, Army Air Force; Head Dyer, bleaching and dyeing of cotton and synthetic fibers.

Age 27; married; references.

The Swedish Woolen and Worsted Industry

JOHN B. WATHEY

Vice-president, Bocon Chemical Corp.

SWEDEN, a country roughly one-fifth the size of the United States in area and one-twentieth of the size in population, supports a textile industry employing 95,385 people with a total annual output valued at 1,333,436,000 Kroner ($370,401,666). Since the summer lasts only approximately six weeks and spring and fall are practically non-existent, it is not surprising that wool in various modifications is utilized in over 80% of this industry.

The Swedish people humorously refer to their country as a bad copy of the United States, and in many of the Swedish industries the American influence is quite evident. In textiles, however, the general pattern of development has been closely parallel to German and, to a lesser degree, to British manufacturing processes and techniques.

The German influence predominates, for example, in dyeing and auxiliary finishing specialties such as water repellents, softening agents and mothproofing compounds. British techniques in spinning, weaving and to a minor degree styling have ben adopted. Swiss and Italian influences are also represented. Switzerland has contributed certain dyestuffs and dyeing techniques as well as a mothproofing formulation, and Italy has developed an interesting although economically unimportant method of giving a "permanent wave" to woolen fabrics which produces a durable "moire" effect. This latter process is a purely chemical change in surface structure of the fabric brought about by the application of steam to carefully restricted areas and immediate subsequent dyeing. To be effective the goods have to be processed at extremely low speeds. Each of the rather cumbersome and space-consuming machines can finish a maximum of only eight yards per 8-hour day.

With the conclusion of hostilities in the recent war there was a virtual vacuum existent in Sweden insofar as finishing agents and certain dyestuffs were concerned. The complete technical services offered by I. G. Farbenindustrie of Germany had made it unnecessary for the individual mill to maintain a laboratory. With these services disrupted by the war's aftermath and Sweden's lack of any organization comparable to the AATCC, testing standards for many products were in a state of confusion. Since Sweden was in a relatively sound financial position and had a sizeable reserve of dollar currency at that time, there was a logical influx of American chemicals and dyestuffs. In many cases this added to the confused status of textile control because of the change in types of chemicals and their methods of application. Widely-followed German methods of application and control simply did not apply to many American products which were chemically dissimilar. Adding to the problem was the fact that American technical assistance was frequently either non-existent or inadequate.

NOTE: Mr. Wathey, Vice-President of Bocon Chemical Corp., manufacturers of Boconize, a durable moth proofing compound, returned recently from a four weeks' visit to Sweden where he surveyed manufacturing processes and techniques in that country's textile industry.—Editor.

Typical of experiences on the Swedish market was that of an American product which was a unique type of durable mothproofing compound. This product had been shipped to Sweden and distributed to numerous mills, but the mill chemist and supervisors were reluctant to make applications according to printed instructions, since they were accustomed to the personalized service of such German firms as I. G. Farbenindustrie. In the relatively few instances where the product was tried experimentally, it was added directly to the dye-bath as was the practice with competitive German products. This was done despite printed directions warning against this procedure. In translation from English to Swedish this warning became "application in dye-bath is not specifically recommended"—a wording which lead to the assumption that the correct methods were merely alternates to the dye-bath application. Once American technical advisers visited the Swedish mills, this misunderstanding was promptly clarified. The product's experience, however, clearly indicates the importance of information distribution agencies such as the AATCC which could supply technical data directly to the mill chemists in parallel cases.

Textile research institutes in Gavle and Goteborg have been slowly but efficiently developing application techniques and methods of testing and control. The institute at Gavle is devoted to cotton and rayon problems and since it is still in a more or less embryonic stage of development it is limited in available equipment. Consequently the results of its fundamental and applied research have not yet been appreciated in the mill. The institute at Goteborg is concerned with wool problems. It has been in existence for a considerably longer time and has made its influence felt to a greater degree. The Goteborg institute, however, is devoted entirely to basic research and is not concerned with application techniques or testing procedures. This still leaves the wool processing industry with inadequate technical assistance. A few of the larger mills do have laboratories which are well equipped and well-staffed, but since they operate independently there are no generally accepted standards even for such routine tests as washing and dry cleaning.

Government controls have modified the attitude of textile management towards styling, dyeing and finishing. Price controls have brought about the limitation of profit to the extent that extreme styling and multicolor dyeings or blendings are practically eliminated. The shortage of dyestuffs due to the disappearance of German products from the market has also abetted the already conservative tastes in Swedish textiles. Profit limitations on each processing operation naturally has caused the textile processor to seek additional functional finishing operations to supplement his net income. Through the impetus of this modified subsidization, water-repellents, fire-retardents, mothproofing and the like have become wide-spread in their use. They have also found ready acceptance by the general consumer.

Mothproofing, for example, has been so widely accepted by the public that labeling of fabrics as mothproof is not

(Concluded on Page 561)

ABSTRACTS

pH in Textile Finishing Processes

Francis Tripp, Textile Bulletin, page 70, Vol. 74, No. 4, April, 1948.

This article explains in a simple way the meaning of pH and its importance in textile dyeing and finishing processes.

An Orifice Test to Evaluate Yarns for Swelling-Type Water-Resistant Fabrics

Herbert O. Smith, Alton L. Murphy and Charles F. Goldthwait, Textile Research Journal, page 124, Vol. XVIII, No. 2, February 1948.

A method for the comparative determination of the swelling or closing capacities of textile fibers and yarns for fabrics is described. The test is based upon the seepage of water under pressure through yarn tightly packed in an orifice. Although the test is subject to errors and inaccuracies it has proved valuable as a practical laboratory test and has been successfully used to predict the performance of several experimental fabrics.

Photographs of the apparatus and test results are included.

"Synthetic Wool"—the Quest Continues

Norris Willatt, Canadian Textile Journal, Vol. LXV, No. 9, April 30, 1948.

This article summarizes general progress to date in the quest for a man-made fiber which can be justly called "synthetic wool," pointing out that the final objective is not even in sight. Any man-made fiber which is to reproduce to any degree the characteristics of the product of a sheep must basically consist of amino acid co-polymers of long chain molecules. From various proteins have been produced synthetic fibers which, between them, manifest all of the properties of wool but no one fiber has been evolved which yields all of them. It is the absence of cross-links in the molecular chain which causes the synthetic proteins to fall short of wool.

The following table illustrates the differences between wool and some of the leading synthetics:

Fiber	*Tensile strength gm./den. dry*	*Elongation at break*	*Fineness (denier)*	*Relative Stiffness*	*Relative Toughness*	*Density gm./cc.*
Wool	1.28	42	4	4	0.20	1.32
Casein	0.7	25-60	4.1	2	0.14	1.30
Soybean	0.81	9.0	1.8	—	—	1.30
Ardil	0.86	20-60	4.4	2.1	0.20	1.30

Textile Testing in Germany

Herbert F. Schiefer, Lyman Fourt and Richard T. Kropf, Textile Research Journal, page 89, Vol. XVIII, No. 2, February, 1948.

Part III—Testing Flexural and Compressional Properties

Tests methods and instruments for the determination of the resistance to creasing and flexural endurance are described. Several schematic drawings are included. Methods for determining thickness, compressibility and compressional elasticity are briefly discussed.

Part IV—Miscellaneous

This section describes the test procedures and instruments for the determination of such physical characteristics as shrinking and creping, swelling, air permeability, hydrostatic resistance, yarn friction, shower testing and other miscellaneous properties. The German standards organization is briefly reviewed. A bibliography is included for each section.

Cotton—a Versatile Textile Fiber

Earl E. Beckley, Textile Research Journal, page 71, Vol. XVIII, No. 2, February, 1948.

This paper reviews some of the recent researches on cotton. The growth of the cotton fiber and environmental effects on the physical properties of the fiber are discussed in detail.

Treatments which modify cotton fibers and the subsequent changes produced are described. Although modern varieties of cotton have good length uniformity for efficient manufacture, growth conditions and processing may have a detrimental effect on uniformity. With regard to growth conditions it would appear that the selection of the proper seed, based on environment, would result in acceptable cotton being produced throughout the Cotton Belt.

The Bleaching of Animal Fibers by Modern Methods

M. H. Wilkinson, The Journal of the Society of Dyers and Colourists, page 8, Vol. 64, No. 1, January, 1948.

The choice of an agent to be used for wool bleaching is governed by three factors: (1) nature of the fiber, (2) degree of bleaching required and (3) cost of the process. The agent can be either of the reducing or oxidizing type. Bleaches produced by reducing agents generally are not permanent but are of low cost.

Scouring is an important pre-bleaching process and care must be taken to prevent yellowing or the presence of a high pH when soda ash or ammonia are used. The use of a chlorinated hydrocarbon in conjunction with soap is recommended.

The neutralization of the bath in peroxide bleaching is emphasized and several agents for this operation are discussed. A four-hour hydrogen peroxide bleaching procedure is given as a substitute for the sulfur stoving process on knitting yarns and knit goods. Methods for the oxidation bleaching of gabardine waste, textile waste and rags are described.

In general, bleaching methods for degummed silks are the same as those for wool with the exception that higher temperatures are used.

In order to obtain a greater reduction in the color of pigmented fibers than is possible with normal hydrogen peroxide methods, studies were made which resulted in a two-stage process for cow hair using a pretreatment with cold hydrochloric acid and a two-stage process in which an impregnation with iron salts prior to bleaching is made. These two methods are described in detail including the several trials made before recommended procedures were developed.

The Felting of Animal Fibers

J. Menkart and J. B. Speakman, The Journal of the Society of Dyers and Colourists, page 14, Vol. 64, No. 1, January, 1948.

This paper presents a review of the previous work on the subject of felting. Prior studies and theories suggested a differential treatment of root and tip ends to increase the felting power of wool fibers and in this regard experiments were conducted with hardened root ends, softened tip ends, and both together. The procedures followed in this work are described in detail.

The results of this work are of most importance in the carroting of fur fibers and it is shown that sodium metabisulfite, a reducing agent, is highly effective for softening the tip ends of fibers. Results indicate that increased felting of wool can be obtained by hardening the root ends with cross-linking agents such as mercuric acetate instead of softening the tip ends.

However the greatest increase in the rate of felting was obtained when a combined hardening and softening operation was performed.

The Dyeing Properties of Chlorinated Wool

J. Barritt and F. F. Elsworth, The Journal of the Society of Dyers and Colourists, page 19, Vol. 64, No. 1, January, 1948.

This paper is presented in three parts:

I—Effect of Chlorination on the Dyeing Properties of Wool.

Chlorination of wool fibers changes the surface structure in such a way as to allow greater and more rapid penetration by dye molecules. In addition, chlorinated wool absorbs certain types of dyes under neutral or weakly acidic conditions which are not characteristic conditions for satisfactory application to untreated wool fibers. Experimental determinations of total combining capacities of wool and chlorinated wool indicate that chlorination does not modify the basic properties of the wool as regards its combination with acids and dye-acids.

II—Dyeing of Tone-in-tone or Two-colour Effects on All-Wool Fabrics.

Several methods using various types of dyes and combinations of wool and chlorinated wool for producing tone-in-tone and two-color effects are given in detail.

III—Fastness Properties.

The fastness properties of chlorinated wool with respect to light, alkaline perspiration and washing were determined and compared with similar dyeings made on unchlorinated wool.

It is indicated that the fastness to light of dyed chlorinated wool is equivalent to that of dyed wool. However it is concluded that, in general, dyeings of chlorinated wool are less fast to perspiration and washing than similar dyeings on unchlorinated wool.

Swedish Woolen and Worsted Industry—

(Concluded from Page 559)

required. The consumer has the impression that mothproofing is of such vital importance that all wool fabrics not labeled to the contrary are mothproofed.

With profits sharply curtailed, it would be natural to suppose that improved efficiency would be uppermost in the minds of mill men. Due to the limited market for the end products, however, rather obsolete methods and machines are tolerated since mass production methods would only further reduce profits by producing more goods than the eight million population of Sweden could consume. Government regulations also prohibit the exportation of all woolen or worsted textiles except felts. The felt industry in Sweden still depends on manual beating and stretching operations, which makes Swedish felt expensive and subject to wide variation in quality.

The design and decoration of the offices, conference rooms and foyers of Swedish mills are in remarkable contrast to the cumbersome and almost antiquated production layouts in those same mills. Almost without exception they are modernistically designed and furnished, with floral arrangements and exquisite oil paintings the rule rather than the exception. By contrast, in the productive end of the organization, modernization is rare. Spinning and weaving plants do not follow this pattern, being modern throughout, but with few exceptions dyeing and finishing plants show this anachronism.

The Swedish mills take great pride in the quality of their fabrics but they have a different interpretation of quality as compared with our own. Due to the rigorous climate a fabric must provide insulation and for this reason, weight of fabric is the accepted measure of quality.

Scarcity of fats has resulted in a soap shortage in Sweden which presents a serious problem in scouring of raw wool and the removal of spinning oils. Synthetic detergents are used with only moderate success. The scarcity of fuels has limited the temperature of most scouring operations, adding further complications. Shoddies and reworked fibers in general are of insignificant importance in the Swedish textile industry.

While production methods in Swedish wool processing mills are generally less modern than ours, it does not follow that their products are inferior. The Swedish textile industry could never compete with us on a price basis because of cumbersome layouts plus machine and employment practices geared to a smaller output. But from the standpoint of workmanship, Swedish woolens compare favorably with American goods. Great attention is paid to details and prime emphasis is placed on excellence of product. Weaving and spinning methods are quite progressive and Swedish interest in finishing processes is marked.

All in all, the general impression of a visitor to Swedish mills is that they are ahead of us in a number of respects in the wool processing industry and far behind us in cotton and rayon.

The DYESTUFF REPORTER is found in all Swedish mill offices and the AATCC is held in high regard. The absence of such an organization in that country is undoubtedly a prime factor in the lack of coordination between mills in an industry which is otherwise quite progressive.

TRADE NOTES • NEW PRODUCTS

• American Standards Incorporated

The American Standards Association became the American Standards Association, Incorporated, August 2, through incorporation under the laws of the State of New York. This is the third in a series of changes which have consistently recognized the enlarging scope of the Association's work.

Organized in 1918 as the American Engineering Standards Committee, a coordinating committee for the standardization work of five of the country's important technical societies, the scope and organizational setup were soon broadened to include associations and government agencies. This led to the extension of the work into the field of safety standards. In 1928, an entire reorganization took place, changing the Committee into a full-fledged "American Standards Association," the nation's clearing house for standards and the U. S. medium for international contacts on standardization. The present change to an incorporated Association again recognizes the enlarged activities and responsibilities of the organization, giving it and its members the protection and benefits which corporation law affords and which is considered essential in the light of the scope of the Association's activities.

Bills seeking Federal incorporation are now before Congress, having been introduced in the House by the Honorable Kenneth B. Keating of New York, and in the Senate by the Honorable Ralph Flanders of Vermont.

Frederick R. Lack, vice-president, Western Electric Company, is president of the Incorporated Association. Vice-Admiral G. F. Hussey, Jr., (USN, ret.) is secretary and administrative head, and Cyril Ainsworth is technical director.

• New Calco Technical Bulletin

A paper "Application and Properties of Vat Dyes" has been published as Calco Technical Bulletin No. 802, for distribution to the textile industry. The new bulletin will be of particular interest to plant dyers. Painstaking care has been used in compiling complete up-to-date information relative to vat dyes and vat dyeing procedures. The various methods used for their practical application to textiles in the form of stock, yarn and cloth are also outlined. Detailed information about the Calco line of vat dyes is furnished the reader. Several new products discovered in the Calco Research Laboratories are included in the list.

A copy of Calco Technical Bulletin No. 802 may be obtained through your Calco representative, or by addressing your request to the Advertising Department, Calco Chemical Division, American Cyanamid Company, Bound Brook, New Jersey.

• Southern Division Offices, Amalgamated

In order to better serve the Southern textile industry, the Amalgamated Chemical Corporation has opened new Southern Division offices at 1819 Spring Garden Street, Greensboro, North Carolina. The phone number is 8691 and the post office box number is 35.

• Winners of Nopco Awards

Charles P. Gulick, President of Nopco Chemical Company, Harrison, New Jersey, announced recently the winners of annual awards for the three best ideas submitted in the past year under the company's Suggestion Plan.

Top prize of $200 was awarded Elmer Heydt, a resident of Nutley, who suggested a means of power conservation.

Richard Van Saders, of Maywood, received second prize of $50 for a suggestion which resulted in the purchase of a spare piece of equipment which has proved itself a valuable acquisition.

Third Prize of $25 went to Martin El Toohey, of New York City, who proposed a liquid level indicator for certain tanks which has likewise proven its merit.

These awards are in addition to those paid at the time the ideas were accepted.

The suggestion system has been in operation at Nopco since 1943. Since that time many employees have enjoyed both satisfaction and profit from seeing their ideas put to work. The management feels that the plan is an exceedingly desirable stimulant to employee morale, since it provides a means by which employees may express their ideas, and gives them greater interest in their jobs and the objectives and progress of the company as a whole.

• General Aniline Appointment

Photograph from Blank & Stoller

Dr. Cary R. Wagner (above) was named Vice President in Charge of Operations of General Aniline & Film Corporation at the August Meeting of the Board of Directors, Jack Frye, Chairman, has announced.

For the past year, Vice President in Charge of Research and Development of General Aniline, Dr. Wagner was for many years Research Director of Pure Oil Company and during World War II he was a member of the staff in the Office of Petroleum Co-ordinator for War.

As Vice President in Charge of Operations, Dr. Wagner's responsibility will embrace the manufacture of dyestuffs, Ansco film and cameras, and Ozalid products in addition to a varied line of General Aniline's miscellaneous industrial chemicals.

• Broadcast on Superset

Sheerset finish that gives wrinkle resistance to a wide variety of cotton fabrics was described for the first time on the air during the week of August 15th on a key affiliation of southern stations. George C. Ramey of the American Cyanamid Company, developers of the finish, discussed it from both the consumer and the mill point of view.

The broadcast was one of a series sponsored by J. W. Valentine Co., Inc., textile selling agents.

The finish is applicable to ginghams, piques, jeans, chambrays, prints, seersuckers, cords, twills, drills, denims, corduroys and coverts as well as slipcover and drapery goods.

Mr. Ramey pointed out that many men have passed up the summer comfort of cotton suits (cord and seersucker, etc.) because they have a "slept-in" look after a few hours wearing. The Superset Finish, it is felt, will widely broaden the use of cotton in the men's field as well as in the women's sports and dress field.

• Chairman of Board, Mathieson

The Board of Directors of Mathieson Chemical Corporation has elected Thomas S. Nichols, president and chief executive officer, to the additional post of chairman of the board to succeed the late George W. Dolan. J. C. Leppart, vice president, was elected a member of the board to fill the vacancy caused by Mr. Dolan's death, and was appointed executive vice president.

Mr. Nichols was named president of Mathieson in April of this year. Prior to that, he was actively engaged in various phases of the chemical industry, having served the government during the war in several capacities in this country and Europe. He completed his service with the government as a member of the Technical-Industrial Disarmament Committee on Chemicals.

Mr. Leppart also joined Mathieson in April. During the war, he was with the War Production Board, devoting his efforts to alkalies, chlorine and related products.

• Polysize Resin Emulsions

Polysize Resin Emulsions have been specially developed for manufacturers of textile finishes faced with demands for new qualities in the finishes produced by them. Because they are basic ingredients for finishes rather than ready-to-use finishes themselves, these products are being offered only to manufacturers of textile finishes.

The resins in Polysize Emulsions are completely pre-cured. Only drying is required to set them. Finishes prepared with them are said to be lightfast, non-yellowing and don't become brittle with age. It is stated that they are odorless, tasteless, and harmless to the skin as well as being highly resistant to acids, alkalis, oils and fats. With Polysize Emulsions, it is claimed, there's no tendering, no absorption of chlorine in bleaching, no increase in the flammability of textiles, and they won't cloud, discolor or alter textile dyes. Resistance to mildew, rot and souring, plus their ability to withstand laundering and dry cleaning are said to be other special

qualities which are of importance to the industry.

A new data sheet P-5 describing the qualities these new emulsions impart to textile finishes is available on request to American Polymer Corporation, 101 Foster Street, Peabody, Mass.

• Booklet on Organic Acids

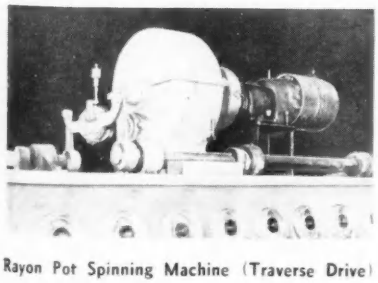
"Organic Acids" is the title of a new booklet just published by Carbide and Carbon Chemicals Corporation. It presents in detail the properties, specifications, and uses of synthetic butyric acid, 2-ethylbutyric acid, caproic acid, 2-ethylhexoic acid, and sorbic acid. These acids are important as intermediates in the production of synthetic flavors, plasticizers, varnish driers, and pharmaceuticals. Thirteen charts in the new booklet present such data as physical constants, solubilities, and electrical conductivity. Constant boiling mixtures and a section on specification test methods are also included.

Copies of this booklet may be obtained from any office of Carbide and Carbon Chemicals Corporation. When requesting your copy, ask for Form 4768-A.

• Post-war Changes in Butterworth Rayon Spinning Machines

The Rayon Division of the H. W. Butterworth & Sons Company, of Philadelphia builders of textile finishing machinery, has announced that numerous refinements and features have been incorporated in the post-war Butterworth Pot Spinning machines. The latest models, of the 100 spindle type, which are being built and shipped to rayon manufacturers both in the U. S. and in such countries as Chile, Mexico and Colombia, Peru, Egypt and others, are equipped with numerous modified features including a redesigned traverse system. It is stated that the patented traverse control mechanism is an outstanding contribution to the development of high speed spinning.

Early in the 1930's, Butterworth engineers set out to develop a traverse drive that would fulfill numerous demands of a spinning machine operating at high speed. Among the factors to be considered were: good operation at high speed; medium vibration from the traverse motion; flexibility of stroke characteristics; easy adjustment of length of stroke and height of stroke; minimum lost time for maintenance.



Rayon Pot Spinning Machine (Traverse Drive)

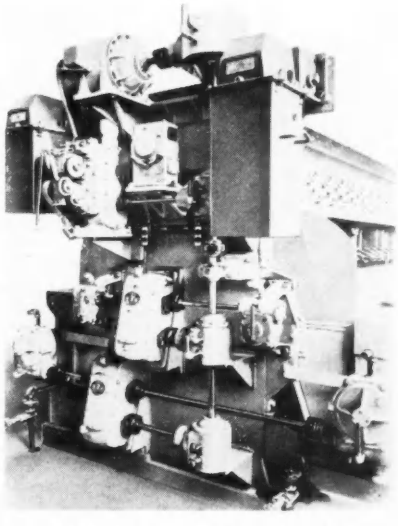
After many experiments, Butterworth developed the traverse drive covered by United States Patent No. 1,968,026. It is stated that this drive is unique in that it has no cams and operates smoothly up to one and a half times the highest speeds obtainable with cam traverse drives.

This fast traverse is said to build cakes of good density with an open wind suited for conventional washing and treating. With high speed operations, the tendency for bands of ribbons to form in the cake are reduced to a minimum. Vibrations are reduced since there are no cam reversals to contribute to them.

Butterworth engineers consider as most important the fact that different spinning conditions such as denier, traverse speed and pot speed change the reversal characteristics of the traverse stroke. Conditions such as these affect the lag between the funnel tip and the laying on point of the cake. Therefore different stroke characteristics are called for in diversified spinning conditions. It is stated that Butterworth's traverse drive from this point of view is the most flexible of any known since with slight adjustment, a variety of stroke characteristics can be obtained. Design features in the control unit enable quick adjustment to give stable cakes, uniform in contour under any set of spinning conditions. No extra parts are necessary for these adjustments.

Precision speed controls on the Butterworth spinning machines are said to be an example of progressive engineering research in developing pot spinning machines to produce the finest quality rayon. The drive of the Butterworth Pot Spinning Machine is novel in its simplicity of design, compactness of construction, and in the precision operation of its controls.

It is claimed that advantages of the Butterworth drive over standard gear



Drive End of Butterworth Rayon Pot Spinning Machine

• District Sales Manager, Nopco

Appointment of Walter E. Brewer (above) as district sales manager for its newly formed Eastern District has just been announced by T. A. Printon, Vice-President, Industrial Division, Nopco Chemical Company, Harrison, N. J.

Mr. Brewer will head up the present field force of five representatives and will be responsible for sales on the products of Metasap Chemical Company as well as those of the Industrial Division of the parent company. He is well qualified to handle his new assignment which is effective immediately. A graduate of Muhlenberg College with a B.S. degree in chemistry, Mr. Brewer has been with Nopco over 12 years. Before acting as a sales representative in Eastern Pennsylvania, a post he has held for the past three years, he acted in the same capacity in the New England area. He is well versed in company products and their application having spent several years in the Harrison laboratories working on product control and customer service problems.

The new Eastern District comprises the Middle Atlantic States from Metropolitan New York to Virginia. In setting it up, Nopco is following a plan inaugurated four years ago to integrate its industrial sales activities within certain geographical areas. This plan has enabled the company to offer greater customer service and obtain wider market coverage on its extensive line of processing specialties.

train drives are numerous. In addition to decided gain of uninterrupted spinning, the infinite speed regulation over a wide range has an advantage in flexibility that is most important to spinning high quality rayon. The drive through Link Belt P.I.V. is said to be considerably smoother than through any gear train. Upper godets, lower godets and viscose pumps are all driven from the main drive motor through spiral bevel gear boxes and Link Belt P.I.V. speed control units. These P.I.V.'s give the godets and pumps infinite speed variation over wide limits without the spinning delays encountered with change gear arrangements. Speed adjustments are made while the spinning machine is running by regulation of the P.I.V. handwheels. This regulation allows for up to 100% stretch between godets and a range in pump speed from 15 to 90 r.p.m. Spinning speeds range from 50 to 100 meters per minute.

"Spinning compensators" have become an important feature on modern spinning machines. For this reason, the upper godets compensator on Butterworth Machines has also been given attention by engineers. In rayon pot spinning, the tension on the thread being drawn into the pot decreases as the doffing period progresses. This decrease in tension is a result of the cake building up, since the centrifugal force acting on the end of the thread diminishes as the inside diameter of the cake gets smaller. The tension decrease changes the denier over the doffing period, giving a slightly heavier denier thread at the end of the doffing period than at the beginning.

As rayon quality assumed greater importance, it became apparent to rayon producers that this change in tension had to be compensated for if the deniers were to be held within very fine limits, and the dye index controlled for a given quantity of rayon yarn.

On Butterworth Spinning Machines, the upper godet wheel is made to increase in speed progressively through the doffing period, thereby increasing the tension on the thread to the upper godet at a rate equal to the decrease in tension on the thread going into the pot. Thus the thread is subjected to the same overall stretch and the denier and dye index controlled over the doffing period.

Other features included in Butterworth Machines are the Funnel Bracket, made of acid resistant material, and designed to give rigid funnel support free of vibration at even the highest traverse speed; upper and lower godets, provided with either smooth or corrugated face as required, with each unit driven smoothly by spiral gears from a drive shaft located inside the lead covering of the machine.

The Butterworth Pump bracket is designed to take the Zenith metering pump. This pump is said to operate with commendable efficiency.

Spinning motors are self-aligning and self-lubricating. Motors are controlled in groups of six by reversing type switches which stop motors within a matter of seconds. Since switches are operated by a foot lever, the doffer has both hands free to begin doffing operations immediately.

Additional features which are available include Plexiglas doors, automatic lubrication systems and duct systems arranged to suit plant conditions.

• President, Triangle Finishing

A. J. Nisbet (above) has been appointed president of the Triangle Finishing Co. of Johnstown, N. Y., which specializes in the processing, dyeing and finishing of warp knit fabrics.

For the past 7 months, Mr. Nisbet has been on special assignment with the Nylon Division of E. I. DuPont de Nemours & Co., Inc., Wilmington, Delaware, in charge of a plant scale warp knitting development program designed to improve all phases of nylon processing in this field. Prior to this assignment, Mr. Nisbet was assistant manager of Nylon Technical Service. His past positions in the Rayon, Acetate and Nylon Divisions, during his 21 years at DuPont, include the following: Supervisor of Process Development, Supervisor of Complaints and Service, and Supervisor of Textile Engineers of the Rayon Division.

Mr. Nisbet majored in Chemical Engineering at the University of Buffalo and University of Delaware.

• Cranston Double-Printing Process

Creation of very fine tropical worsted and heavy tweed effects on popular-priced cottons through a system of double-printing was announced recently by Felix Kramer, president of the Krasom Company.

To be known as "Tradewind Tropicals" and "Dynamic Suitings," the fabrics will be printed under the Cranston Process in between 50 and 60 patterns for the tropical-weight line and 15 patterns in the tweeds, Kramer said. The "Tradewind Tropicals" will come in multi-colored plaids, stripes, checks and overplaids, covering a wide color range. The second line, employing a cotton of heavier construction, will feature plaids, Herringbones and overplaid patterns. The fabrics are completely washable, being vat-dyed and Sanforized.

"We feel that the effects we have been able to create with the Cranston double-printing process constitute a great step forward in the promotion of fabrics in the popular-priced field," Kramer said. "We have been working on the line for a long time but until now we did not feel that the market was right to inaugurate an aggressive sales program. We feel that the time is ripe to launch it."

Selling organization for the Krasom Company is the Franklin Manufacturing Company.

• Papers on Zirconium and Hydrogen Peroxide

More vivid color printing is promised by a new application of zirconium, the little used metal that is the main ingredient in the semi-precious gem, zircon, Dr. Warren B. Blumenthal, chief chemist of the Titanium Alloy Manufacturing Company, Niagara Falls, N. Y., said on June 28th at the American Chemical Society's national symposium on physical and inorganic chemistry at Syracuse University.

Until recently, little advantage was taken of the unusual properties of zirconium for preparing commercially important pigments of great brilliance from solutions of basic and acid dyes, according to the speaker. Acid dyes are formed by adding such alkaline metals as calcium and aluminum to dye solutions, and basic dyes by adding metallic acids such as tungstic and molybdic acids, in conjunction with phosphoric acid, he explained.

Dr. Blumenthal said that zirconium is unusual because of its ability to serve either as an acid or a base, depending on the conditions of the chemical reaction involved. A product made possibly by this valuable property is a basic zirconyl salt which yields a brilliant red pigment of soft texture, he said, adding that pigments of this type have a higher tinctorial strength than comparable pigments now on the market and promise greatly improved color printing.

Other zirconium compounds, he continued, produce pigments having lower raw material costs than those on the market, particularly in comparison with the tungstic acid colors.

"Aside from their use in the preparation of pigments," Dr. Blumenthal declared, "the reactions of the zirconium compounds with dyes have potential value in the purification of dyestuffs, the fixation of dyes on fabrics and the decolorization of liquids. The reactions shed considerable light on the chemistry of zirconium. The capacity of this element to form certain ions under certain conditions, and complex electronic structures under others, reveals new ramifications of zirconium chemistry of both theoretical and practical value."

Problems involved in the hazardous task of handling highly concentrated hydrogen peroxide were discussed in another paper presented at the same session. The author, Dr. Frederick A. Gilbert, assistant to the vice-president of the Buffalo Electro-Chemical Company, Buffalo, said that very thorough studies have been carried out recently by peroxide manufacturers, shipping agencies and government bureaus to determine the nature and extent of the hazards, and means of meeting them.

In cooperation with the United States Bureau of Explosives, proper shipping containers have been designed, according to the speaker, who explained that the chief danger in handling concentrated hydrogen peroxide lies in its most valuable quality, its ability to generate large volumes of water vapor and oxygen at high temperatures.

"These investigations have shown conclusively that if concentrated hydrogen peroxide is correctly handled there is no more danger associated with the product than with many other commercial chemicals now in use," he asserted.

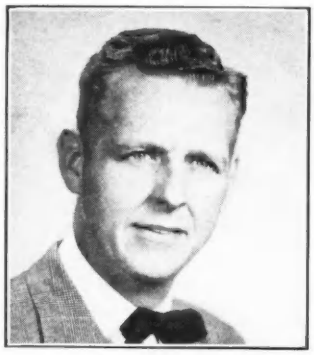
Dr. Gilbert said that hydrogen peroxide has gained real commercial importance only in the last twenty years, and that since it is an easily usable source of power, heat, and oxygen, it is finding increasing applications in the jet and rocket fields.

• Monsanto (Canada) Officers

The election of Arnold H. Smith as president of Monsanto (Canada) Limited with offices in Montreal, was announced recently by William M. Rand, president of Monsanto Chemical Company.

At the same time, Mr. Rand announced that Leo G. Ryan would remain as chairman of the board. Mr. Ryan, who has been largely responsible for the growth of the Canadian company, has been president since 1933.

• Sales Manager, International Salt



Edward L. Fuller, President of International Salt Company, Inc., has announced the appointment of Edson K. Green (above) as General Sales Manager of the company.

Mr. Green has been Assistant Sales Manager since 1945 and prior to that time served as the company's New York City district manager. He has been with International Salt Company, Inc. since 1929 and lives in Scranton, Pennsylvania, where the company's main office is located.

Concurrently, L. E. Ryan was elected first vice-president of the company. A graduate of McGill University, L. E. Ryan has been associated with Monsanto (Canada) since its organization. When the company was reorganized in 1946, he was elected vice-president. In 1947 he was elected a director of the company. He will remain in charge of the manufacturing and development programs of the Canadian organization.

Mr. Smith, a native of Akron, O., has been elected a vice-president and member of the board of directors of the Canadian company on Jan. 1, 1948. Prior to that time he was acting managing director of Monsanto (Australia) Pty., Ltd. Before his Australian assignment, which began in December, 1946, Mr. Smith served as Director of Monsanto's Foreign Department.

• Supersonic Research at U. S. Testing

In entering the field of supersonic research, the United States Testing Company, Hoboken, N. J., announced recently the completion of arrangements to take over in specific fields the research and development activities of the Crystal Research Laboratories of Hartford, Conn. This latter company developed the Ultra-Sonorator, the first laboratory apparatus for utilizing commercially the sound waves in ranges above those audible to the human ear. The deluge of inquiries for possible use of high frequency sound waves in various types of manufacturing necessitated separation of these potential developments from the actual production of the apparatus. The United States Testing Company was selected as the logical place to handle these inquiries and carry on research projects in this field.

The Ultra-Sonorator apparatus is now being installed at the Hoboken plant of the Testing Company, which together with a carefully selected scientific personnel, will form a complete operation for servicing this new field of investigation.

According to officials of the United States Testing Company, the studies will involve "ultrasonics" as differentiated from "supersonics." While the two terms have been used interchangeably, men in this field reserve ultrasonics to describe frequencies of vibration or processing, while supersonics refers to speed of motion, namely speeds above the speed of sound.

Ultrasonics have already been used commercially for detecting flaws in metals, plastics and other materials by sending sound waves through the mass and charting the time of the rebound. The Sonorator, as developed by the Crystal Laboratory, utilizes the terrific vibrations set up by sound waves of over 200,000 per second and up to 1,500,000 per second for mixing all types emulsions, destruction of bacteria and other uses of tremendous significance. It is stated that the vibrations are so violent oil and water have been mixed into a perfect solution.

The United States Testing Company will merge the ultrasonic laboratory with its other integrated operations covering textiles, biology, chemistry, mechanical and electrical engineering, leather, dyestuffs, etc., so as to furnish a complete range of potential uses, in the special phases for which the new laboratory is designed.

• Calco Plant Completed

Calco Chemical Division of the American Cyanamid Company announces that the third production unit at the new plant at Willow Island, West Virginia has been completed and is now in operation. Completion of this third unit concludes the construction work now planned at the huge chemical plant located on an eleven hundred acre site at Willow Island, West Virginia.

The first unit of the Willow Island Plant went into operation November 25, 1947 for the production of pharmaceuticals including the new wonder drug,

Folic Acic. A second unit was completed in February, 1948 for the manufacture of Iron Blue, a pigment very widely used in printing inks and surface coatings.

The new manufacturing unit produces melamine. Melamine derivatives have served many industries, including the paint and varnish, plastics, paper, and textile industries. Derivatives from melamine produced at Willow Island are marketed under such trade names as Melmac, Lanaset, Laminac, and many others.

• Ground Breaking Ceremony, PTI

Theodore B. Hayward of Swift & Company, Philadelphia, First Vice-President of The Philadelphia Textile Institute Foundation and Chairman of the Foundation's Building Committee, has announced that the formal ceremony of breaking ground for the new Philadelphia Textile Institute at its recently acquired site at School Lane and Henry Avenue, Germantown, Pa., would take place at 2:00 P.M. on the afternoon of Wednesday, September 15, 1948.

• American Viscose Appointment

Appointment of Jackson A. Woodruff as head of the dyeing and finishing division of American Viscose Corporation's textile research department was announced recently. The textile development laboratory division, which Mr. Woodruff founded last year, will be merged with the dyeing and finishing division.

The change follows the resignation on July 1 of Harry F. Creegan as head of the dyeing and finishing division to join the Rodney Hunt Machinery Manufacturing Company, of Orange, Mass. Mr. Woodruff joined Avisco's textile research department in 1943 and headed the dyeing and finishing research laboratory for three years before founding the development laboratories last year.

A graduate of the U. S. Naval Academy and of Columbia University, Mr. Woodruff spent two years in Sidney Blumenthal Co.'s spectrophotometric laboratory and five years managing that company's pilot plant before joining Avisco's textile research department.

• Joins Johnson & Johnson

George F. Smith, president of Johnson and Johnson, has announced that Raymond B. Seymour has accepted an appointment as director of the Special Products Research Division of this firm.

Dr. Seymour recently resigned his position with the Industrial Research Institute of the University of Chattanooga, where he had been director since its inauguration three years ago. He is the author of many publications and patents and has considerable experience in plastics and textile research with Monsanto Chemical Co., Atlas Mineral Products Co. and Goodyear Tire and Rubber Co.

• Stainless Steel Poteyes

Riggs & Lombard, Inc., of Lowell, Mass., producers of the Fleet Line of finishing equipment, manufacture the Stainless Steel Poteyes shown above.

R. & L. claim that their Stainless Steel Poteyes are superior to the commonly used porcelain type on installations such as batch and other washers, fulling mills, as leads for scutchers, etc.

They support this claim with actual "in use" results which are said to have proved that Stainless Steel Poteyes do not break or crack, have low friction and minimum abrasion, are resistant to chemical action, and the fact that steel cannot be broken by swelling wood as can porcelain.

R. & L. Stainless Steel Poteyes come in a wide variety of standard sizes, round and oval. Full information can be had by writing direct to Riggs & Lombard, Foot of Suffolk Street, Lowell, Mass.

• Sulframin AB Concentrate

A new synthetic surface active agent claimed to be 224 per cent stronger than conventional types, is being marketed to the industry under the name Sulframin AB Concentrate by the Ultra Chemical Works, Paterson, New Jersey. This material is a very highly concentrated dodecyl toluene in small flake form. The new detergent is recommended by the manufacturers for a wide variety of uses and in various industries including cleaning compounds, textile processing, insecticide-germicide-fungicide, laundries, leather processing, cosmetics and paper manufacture.

Sulframin AB, the result of long experimentation and research in the Ultra Chemical Works laboratories, is said to have many commendable features, including high concentration, resistance to acids and alkalis, and excellent detergency, especially at higher temperatures.

It is stated that the new detergent performs several important functions, among which are: cleanser, dyeing assistant, wetting agent, penetrant, etc. Combined with an equal quality of complex phosphate (tetrapyrophosphate, Quadrafos, etc.), Sulframin AB Concentrate is said to become an excellent laundry detergent.

It is stated that many manufacturers are at present experimenting with Sulframin AB Concentrate with the assistance of Ultra Chemical Works technicians to develop better and faster processing and cleansing methods.

• Standard Brands Appointment

John H. LaWare, Manager, Special Products Division, Standard Brands, Inc., New York, has announced the appointment of Howard L. Jenkins as Manager of the Diastafor Department.

Mr. Jenkins has sold Diastafor for the past 29 years and has helped to solve de-sizing problems in connection with dyeing, bleaching, and finishing operations.

OBITUARY

GEORGE W. DOLAN

GEORGE W. DOLAN, chairman of the board of directors of Mathieson Chemical Corporation (formerly The Mathieson Alkali Works) died on July 24 after a brief illness. He was 46 years old.

Mr. Dolan was born in Cleveland, Ohio, and attended grammar and high schools in that city. He was graduated from Western Reserve University at Cleveland in 1928.

After joining Mathieson as a salesman in 1930, Mr. Dolan became manager of carbon dioxide sales in the following year and in 1935 was made assistant general manager of sales. He became assistant to the president of the firm in 1937, and the following year was named vice president. In 1940 Mr. Dolan was chosen executive vice president and on January 1, 1944, became president of the company. In April, 1948, he was named chairman of the board.

A veteran of World War I, Mr. Dolan was active in the American Legion. During the last war he was Assistant District Chief of the Chemical Warfare Service of the U. S. Army's New York Procurement District. He was a member of the National Industrial Conference Board and of the Advisory Board of the Marine-Midland Trust Company. He was also a member of many clubs and organizations, including the Uptown, Winged Foot Golf, Chemists and New York Athletic Clubs, all in New York, the Columbia Country Club in Washington, D. C. and the Society of the Friendly Sons of St. Patrick.

Mr. Dolan is survived by his wife and a son.

• PATENT DIGEST •

PAUL WENGRAF

Pigment Dyeing and Printing, Aftertreatment with Resin Solutions D, 2, 07

Brit. Pat. 591,939
(Am. Cyanamid, Greene-Kienle-Vartanian, Sept. 3, 1947)

Printing and dyeing with pigment emulsions has acquired an ever greater importance in recent years. While many attempts for fixing the pigments by hardening oils or pretreatments or aftertreatments with resin pre-condensates have been made, the first remarkable progress could be observed by applying water-in-oil—or also oil-in-water emulsions as typified in the Aridye processes. The present invention discloses that despite good results attained in these procedures still some defects remained especially as far as the washfastness and the fastness to crocking are concerned. This drawback becomes especially manifest when the fabrics are first exposed to the action of light and washed thereupon. Fabrics, dyed or printed with a pigment may pass a standard washing test if not previously exposed to light, but after a longer exposition to light the material, subjected to the same test shows that the colors wash down very badly. This problem could be solved by a relatively simple procedure: the printed or dyed fabrics have to be aftertreated with an amide-aldehyde resin (urea, thiourea, biuret, mealamine, etc.) modified by a polyalcohol (glycerin, sorbitol, ethylene glycol). The resin condensates as well as their polyalcohol modifications have to be water soluble which is the principal condition to be observed in the process. According to one of the examples a pigment emulsion, containing methyl cellulose and a glycerol phthalate resin was used for padding a strip of cloth. The fabric was dried, heat cured at 120° C. and passed through a finishing solution, comprising 8% of a urea-formaldehyde solution alkylated under acid conditions with ethylene glycol. After removing the excess resin solution the sample was again cured at 120° C. The dry-crock and wet-crock resistance were greatly improved as compared with an untreated specimen and the hand was tested as excellent. The same effect is obtained in treating pigment printed textiles. It has to be added also that a local treatment of pigment printed patterns gives reliable results, thus saving the costs of a treatment of the entire fabric in a padding machine.

References concerning the fixation of dyestuffs of various classes using melamine formaldehyde condensates have been published amongst others in Brit. P. 480,316 and 482,345 (Ciba). Ger. Pat. 392,183 (Hans John) described the application of methylol-urea as a fixing agent for different dyestuff prints also for pigments. Ger. P. 750,397 (I. G. Farben) proposes fixing dyestuffs by using urea-formaldehyde with an excess of formaldehyde (see AMERICAN DYESTUFF REPORTER, 1947, 312). U. S. Pat. 2,431,562 (Ciba) protects a process for improving the fastness of dyeings by using melamine-aldehyde-condensates (see AMERICAN DYESTUFF REPORTER, 1948, 290).

Raising—Local Effects by Printing Artificial Resins on Rayon G, 6

Brit. P. 586,406
(Courtaulds Ltd., McFarlane, March 18, 1947)

It has formerly been proposed to apply two or more colors to a woven fabric by the usual printing methods, the printing pastes having the property of resisting to napping or pile raising. These fabrics can be dyed later on or before removing the "raise-resisting paste" in a dyebath which generally leaves the resist covered areas undyed. Thus multicolor effects combined with napping effects are produced. The present patent consists of printing restricted areas of the fabric with a printing composition containing as a resist an artificial resin, drying the prints and submitting the fabrics to a raising operation. A dyestuff may or may not be added to this paste and the raised fabric may be cross-printed, cross-dyed or finished in such a manner that the contrasting effects appear as distinctly as possible. One of the examples shows the details of this process. A viscose rayon knitted fabric is printed with a paste containing a urea-formaldehyde modified alkyd resin plus triethanolamine, zinc oxide and water. After printing, the fabric is dried, baked for 5 minutes at 140° C. (thus the resin is cured after drying) and then run eight times through a wire card raising machine. The printed areas are not attacked by the raising rollers. Of course this protection is a mechanical one but it is possible as well to incorporate for instance an alkaline vat printing composition within the resist while the non-printed parts are padded in aniline black or another preparation, destroyable by alkalies. In this way colored flat prints are obtained on a raised black ground. The materials proposed for use as resists are cellulose ethers and esters, polymerized compounds of the polyvinyl type, thermosetting resins such as urea- (or melamine-) formaldehyde, alkyl resins and the like.

Earlier work done in this field:

The specification refers to Brit. P. 12,037, 1897 (Paul Dosne, assignor to S. Schwabe & Co.), the first patent in which printing pastes acting as resists in raising operations were described. This patent suggests printing simultaneously two or more colored pastes, one of them containing the ingredients to act as a resist, i.e. starch or dextrine thickener, the other pastes *not intended* to resist the raising action, for instance tragacanth mixed with hygroscopic or softening materials such as glycerin.

Cellulose Oxypropionic Acid From Acrylonitril—for Producing Permanent Finishes and the Like G, 2, 01

Brit. P. 592,352
(British Thomson Houston Comp., Sept. 16, 1947)

Carboxymethyl celluloses have frequently been applied in recent times for *permanent finishes,* for plasticizing and coating purposes and as emulsifying agents. The compound "C M C" of Dow Chemical Co. belongs to this type of products. The present patent covers a new method of preparing compounds of this group. An alkali soluble cellulose derivative is obtained by transforming first cellulose into alkali cellulose and reacting the latter with acrylonitril: $CH_2{:}CH.CN$. This substituted nitril is transformed according to standard methods into the corresponding cellulose-oxy substituted acid. The most valuable results in reacting cellulose with alkali were obtained by employing an aqueous solution of caustic alkali of 20-40% concentration. According to an example 162 p. of (alpha-) cellulose are dissolved with stirring in 675 p. sodium hydroxide (25%). A thick suspension results to which 530 p. acrylonitril are added drop by drop while continuously stirring at room temperature. After 15 hours the mixture is acidified, giving cellulose-beta-oxypropionic acid: Cell - O-CH_2-CH_2-COOH. This solution is precipitated by pouring it into alcohol. A white precipitate results which may be used as mentioned above.

Reference is made to U. S. Pat. 2,349,-797 (Rohm & Haas): carboxy-ethylether of cellulose is prepared by reacting cellulose-alkali dispersions with acrylonitril. The products can be used as permanent finishes. According to the same company's U. S. Pat. 2,420,949 the water resistance of these finishes is improved by precipitating them with zirconium salts.

Glass Fibers Dyeing—Coating with Magnesium Silicate as Mordant C, 4, 07

U. S. Pat. 2,433,292
(Owens Corning Fiberglass, Perloff, December 23, 1947)

The methods of dyeing glass fibers by adding pigments to the mass have some drawbacks which are enumerated in the present patent. The principal disadvantage is in the change of the original shade of the pigment and at the same time in an alteration of the properties of the glass substance. Although obviously non-swellable fibers like glass cannot be dyed by standard immersion methods attempts have been made for covering first the fibers with a layer suitable for becoming colored by dyeing it with known organic dyestuffs. The present invention belongs to this group. The fibers are first dipped into a suspension of a special brand of magnesium silicate (tradename "Hectorite") which is found in the State of California. By drying the impregnated yarns a continuous film is deposited as a surface layer. Thereupon the material is treated with a solution of an organic dyestuff (examples: Methyl Red, Methylene Blue, Methyl Orange) dried again and aftertreated with lead acetate (optionally also with a Zn, Ni, Co or U salt). A precipitate is formed giving sufficient fastness to the adherent dyestuffs. It is claimed that no undue bleeding in water occurs.

References cited by the Patent Office are, amongst others:

U. S. Pat. 2,309,962 (Kraus): pigmented hard silicate coatings are formed by using colloidal clays of different characteristics for producing shingles, tiles, slabs and the like.

U. S. Pat. 2,245,783 (Owens Corning): forming a surface layer from a heavy metal salt (lead acetate) by double decomposition. This layer may later on function as a mordant for pigments for instance for producing lead chromate.

U. S. Pat. 2,184,316 (Owens Corning): binding glass fibers by a slurry of clay, bentonite and the like but *not for dyeing purposes.*

For other references see abstracts to U. S. Pat. 2,394,493 (AM. DYEST. REP. 1946, 336) and U. S. Pat. 2,428,302 (AM. DYEST. REP. 1948, 384).

Vat Dyeing—Eliminating the Tendering, Influence of Light C, 4, 02

U. S. Pat. 2,435,591
(Ciba, Landolt, February 10, 1948)

Textile materials dyed with certain yellow or orange shades are known to be particularly sensitive to the action of sunlight. It has been observed that tendering can be avoided or at least substantially reduced by treating the dyed (or printed) fabrics with resin condensates formed from formaldehyde and a nitrogen base, containing *less oxygen than urea.* Specific examples for this kind of base are dicyanodiamide, dicyanodiamidine and melamine. Preferably products condensing at a *pH not less than* 7 are used. The specification emphasizes that the use of these condensates for textile treatments, especially for finishes and for fixing dyestuffs, has been recommended many times. In the present process however, the treatment relates to vat dyestuffs, possessing by themselves a high degree of fastness so that an aftertreatment with this type of condensate for fixing the dyes would have no particular purpose. This kind of application of resin condensates to vat dyeings is therefore new and the effect of preventing the tendering action of light rays is the more surprising because *urea condensates* (for instance dimethylolurea) *do not eliminate* the tendering tendencies of light rays at all. Another additive effect is the improvement of light fastness of vat dyestuffs of different shades, not only of orange or yellow brands, According to an example a cotton fabric dyed with the orange vat dyestuff Colour Index 1096 (Indanthrene Golden Orange G) is impregnated with a resin of the melamine-formaldehyde type, dissolved in formic acid to which copper acetate has been added. This sample was exposed to light under the same conditions as a non-treated specimen. The resin treated material lost after exposure about 37% of its strength while the tensile strength of the non-treated sample decreases from 100% to 19%. The fastness to light was remarkably improved on a fabric dyed with blue vat dyestuff Colour Index 1185 (Ciba Blue 2 B, Bromo-indigo).

References cited by the Patent Office are, amongs others:

U. S. Pat. 2,169,546 (Ciba): describes fixing dyestuffs which are fast to light but not fast to water (for instance acid dyestuffs) with melamine-formaldehyde condensates.

U. S. Pat. 2,197,357 (Ciba): similar compounds are used for finishing, stiffening, coating or the like.

U. S. Pat. 2,253,457 (Courtaulds): dyeing spun rayon fabrics, mordanted with cyanamide- formaldehyde condensates with different dyestuffs, especially with Indigosols.

U. S. Pat. 2,322,333 (Ciba): relates to improvements of the water fastness of direct dyes by *higher* molecular nitrogen base-formaldehyde condensates, i.e., water-insoluble compounds.

U. S. Pat. 2,364,726 (Ciba- Landolt): improving the light fastness of direct dyeings by higher molecular nitrogen base-formaldehyde condensates, combined with copper salts.

U. S. Pat. 2,375,124 (Courtaulds): suggests pretreating a cellulosic fabric with a condensate of diphenyl guanidine or a similar base and formaldehyde to obtain affinity to acid dyestuffs and a softer handle at the same time.

Earlier work, done in this field: Tendering of vat dyed or printed cellulosic fibers has been first studied by the inventor, Landolt, in *Bull. Feder. Int. Ass. Chim. Text,* February 1933, 2 p. 102-115. Almost a complete list of vat dyestuffs, available in the trade at that time was given and an evaluation of their destructive power under the influence of sunlight was offered in this publication. The problem has further been studied by Turner, Scholefield, Whittaker, Haller and other scientists. (see *Journal of the Society of Dyers and Colourists* LI, 1, p. 5 and 4, p. 117; *Rev. Gen. des Mat. Col.* vol. 39, p. 289, *Mell Text. Ber.* XVII, 2, p. 138, etc.) Generally the fibers, dyed in yellow and orange shades are most affected by the tendering action, but violet and blue shades also suffer, although in a somewhat lesser extent. It is supposed that the dyestuffs act as catalysts accepting and giving off in turn free oxygen. Only very few suggestions have been published up to now for eliminating this trouble, for instance sulfite waste liquor (Whittaker) and anti-oxidants (oxygen acceptors) such as hydroquinone according to Brit. P. 461,752 (I.G.).

Glass Fiber Dyeing—Coating with Organosilicon Compounds C, 4, 07

U. S. Pat. 2,436,304
(Corning Glass Works, Johannson, February 17, 1948)

The method recommended in the present patent for coloring glass fibers is similar to that described in U. S. Pat. 2,433,292, discussed above. A surface active layer is likewise formed on the glass fiber, consisting here of organosilicon compounds, particularly hydrolyzable organosilicones. This expression covers derivatives of silicane SiH_4, containing halogens, amino groups, alkoxy or aryloxy radicles. Hydrolysis of these substituted silicanes

produces the corresponding hydroxysilicanes (also called "silicols") which in turn generally polymerize to substances, containing one or more Si-O-Si groups. A primary coating is applied to the glass fibers by dipping or spraying. Hydrolyzation is thereupon carried out by heating: a rather stable, thin film, surrounding the fiber results. According to one of the examples a mere drying operation is sufficient for producing a film to which organic dyestuffs finally can adhere. This example describes a process consisting of dipping glass fibers in a solution of phenylsilicon trichloride:

—$Si{\equiv}Cl_2$ in benzene, drying, rinsing with pure benzene and drying again. Fibers prepared in this way could be dyed with basic colors such as Victoria Green, Victoria Blue, Phosphine NO and the like and the dyeings remained unchanged when treated for seven hours with boiling water.

References cited by the Patent Office are, amongst others:

U. S. Pat. 2,306,222 (Gen. Electric): treating different surfaces (glass included) with methylsilicon chloride or similar substances to render them absolutely water repellent.

U. S. Pat. 2,315,329 (Owens Corning): describes a composite glass article produced by subjecting glass fibers to a heat, and thereafter to an acid treatment, so that a porous structure results which may be filled with a dyestuff solution, comprising a viscous liquid having a higher boiling point than water.

U. S. Pat. 2,258,218/9: these patents protect the manufacture of various silicon compounds used generally as coatings for glass, asbestos and the like fibers in order to make them fire and water resistant; they do not relate to dyeing operations.

INDEX TO PATENT DIGEST

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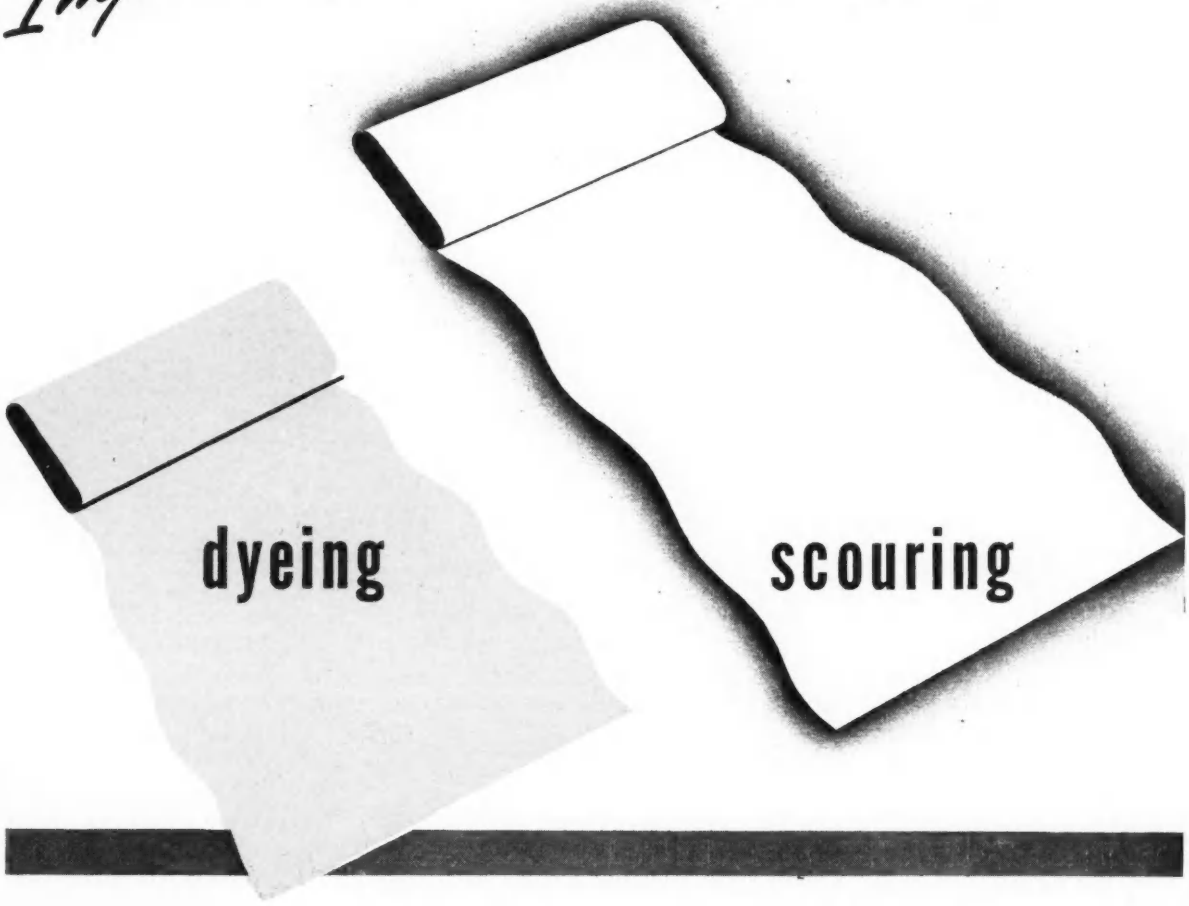

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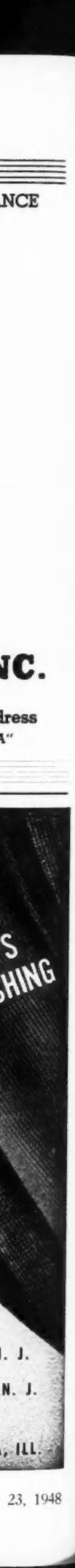

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1041-43 Frankford Ave., Philadelphia 25, Pa.

So. Office: 617 Johnson Bldg., Charlotte, N. C.

NOPCO PRESENTS

"UNISIZE"

AMAZING NEW 6-IN-1 SIZE FOR ACETATE AND VISCOSE RAYON WARPS

1 Product 6 Functions

As a
1 Binder
2 Softener
3 Penetrant
4 Lubricant
5 Humectant
6 Defoamer

EASY TO USE—JUST MIX WITH WATER

"UNISIZE" is a *complete*, one-product size for Acetate and Viscose Rayon warps of all constructions . . . its unique, balanced properties provide advantages far surpassing those of conventional warp sizing compounds . . . its *simplicity*, *effectiveness* and *economy* have won unanimous and enthusiastic approval from users.

WHAT "UNISIZE" IS

"UNISIZE" is *chemically* a synthetic, proteinized, water-soluble polymer; *physically* a light tan free-flowing granulation—a single, *one-product* size which performs *six* essential sizing functions.

ADVANTAGES OF "UNISIZE"

SIMPLE, READY TO USE you waste no time predissolving raw materials . . . you need no complicated formulas. "UNISIZE"—a *model of simplicity*—affords the big advantage of a *single* product replacing the many complex mixes of the past. *Extremely soluble*, "UNISIZE" dissolves quickly and completely without gelling or lumping.

CLEAR-CUT FORMULATION you simply weigh the required amount of "UNISIZE" . . . 25 lbs. for Viscose warp, 50 lbs. for Acetate . . . and add it to 100 gallons of water heated to 180° F. Then, stir slowly for 8 minutes—run in quetch at 150° F.

EVEN DISTRIBUTION ON WARP in the quetch, there's no foaming, scumming or separation to prevent even distribution of the size on your warp. The warp comes off the last can without sandy hand—*smooth* and *firm*.

SUPERIOR BOND, FLEXIBLE FILM creating a *strong* bond, forming a *flexible, non-tacky* film, "UNISIZE" gives you maximum filament protection . . . eliminates taping . . . prevents sticking on drying cans.

ANTISTATIC PROPERTIES by preventing static during the *slashing* operation, "UNISIZE" eliminates banding. These same properties also reduce static during *weaving*.

UNIFORM SIZING "UNISIZE" will give you uniform sizing, warp after warp . . . the result of Nopco's rigid control through every step of its manufacture.

EASE OF BOIL-OFF "UNISIZE" scours out readily during normal boil-off procedure. No enzymes are required.

FINALLY, "UNISIZE" GIVES YOU FINER WARPS with smoother ends . . . *better* conditioned for *better* weaving. ECONOMICAL SIZING . . . on a performance basis, "UNISIZE" costs you far less than conventional sizing treatments . . . you'll save in both time and labor.

"UNISIZE" will solve your sizing problems. Send for a working sample today, or ask to have a Nopco representative run a trial in your mill soon. Write to:

NOPCO CHEMICAL COMPANY
2304 Essex St., Harrison, N. J.
(formerly National Oil Products Company)
Branches: BOSTON • CHICAGO • CEDARTOWN, GA. • RICHMOND, CALIF.

UNISIZE

6-IN-1 WARP SIZE FOR VISCOSE AND ACETATE

NOPCO EVOLVED THROUGH RESEARCH

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VAT · ACID · DIRECT · BASIC
FAST COLOR SALTS & BASES

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Laboratory and mill-tested Laurel Triconates have won favor with leading hosiery mills and processors because of their high efficiency and economy. Send today for sample and recommendations for use.

soaps, oils, finishes

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Wm. H. Berolet's Sons

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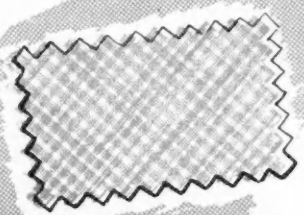
FOR PERMANENT
UNIFORM FINISH

A HARTEX PRODUCT

Cation-active Softener



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The rate for "Position Wanted" advertisements in this column is 2 cents a word—with a minimum of 50 cents per insertion. For all other types of advertisements—i.e., help wanted, machinery wanted or for sale—the rate is $7.50 per column inch or less per insertion.

TECHNICAL SALES REPRESENTATIVE: Wanted by well-established sizing specialists to help develop line of textile auxiliaries and finishes. Require: young man, at least 5 to 10 years' experience in wet processing and finishing, good sales personality. Good salary for right man, excellent future. Southeast. Write Box 344.

TEXTILE CHEMIST: Well established manufacturer NYC area seeking textile chemist with extensive knowledge and experience in manufacture and development of textile auxiliaries. Knowledge of dyeing and finishing preferable. Excellent prospects for right man. Write Box No. 420.

POSITION WANTED: New England preferred. Dyeing, printing and finishing superintendent seeks connection with reliable concern. 18 years experience in bleaching, dyeing and printing and finishing cotton and rayons. Textile School Graduate. Write Box No. 465.

WANTED: Technical Sales Agents by basic chemical manufacturers with over twenty years' experience in textile field. Write, giving experience in wet processing and finishing. If you have the contacts, we will furnish the products, research facilities and advertising support. Write Box No. 485.

WANTED ACETATE TRICOT DYER: By Eastern Pennsylvania Dye Plant. Excellent salary and prospects. Production 50,000 lbs. weekly. Write Box No. 488.

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POSITION WANTED: Chemical Engineer—Columbia graduate. Age 24; married. Seeking technical position. Will consider sales. Write Box 489.

POSITION WANTED: Screen printing colorist and processing supervisor available about September 1st, for position of responsibility. Ten years experience color-matching and subsequent handling of all types dyestuffs, including developed, on variety of fabrics. Textile School graduate; Age 31; Married. Location desired: U. S., or Canada, or South America. Speak Spanish fairly well. Write Box 490.

WANTED: CHEMIST to assist president of a medium sized dyehouse in Paterson area. Must be capable of handling dyeing problems, although work will consist primarily of a supervisory nature. This is an excellent opportunity. Give full background and salary expected. Write Box No. 491.

WANTED UNDERWEAR BLEACHER AND DYER: Must be technical college graduate with practical experience. Capable of supervising bleaching and dyeing. Prefer Southern man as plant is located in Georgia. Excellent opportunity with old established manufacturer. State full background and age. Write Box No. 492.

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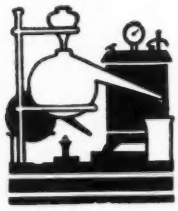

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Bright colors due to the

PENETRATING and LEVELING qualities.

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Excellent for Soaping Vats — not affected by hard water.

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WHICH SHOULD WARRANT YOUR ATTENTION

***AQUAROL:** A water repellent for processing woolen, cotton and rayon fabrics, also produces excellent results in splashproofing or finishing all types of hosiery.

***PARAMINE T A:** A cation active softener for processing cotton and rayon cloth to obtain a soft, smooth, pleasing finish.

ANTHOMINE: Auxiliary used in all wool dyeing processes to produce a uniform shade and impart a soft pleasing hand to stock, yarn and cloth. Improves exhaustion of dye bath and increases color yield. Very effective for levelling shade of tippy and mixed wools.

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***ARIPEL F S:** Finish and gas inhibitor for processing dyed acetate rayon—produces a soft, full feeling finish and prevents gas fading of the color.

***LANITOL F:** A synthetic detergent possessing exceptional scouring and washing properties for processing wool, cotton, rayon or nylon.

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***CULOFIX:** Used as an after treatment in last rinse to prevent bleeding of direct dyed cotton or rayon in water.

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And a complete line of Oils, Chemicals, Softeners and Finishes for Wet Processing All Textile Fibres

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Newark, New Jersey

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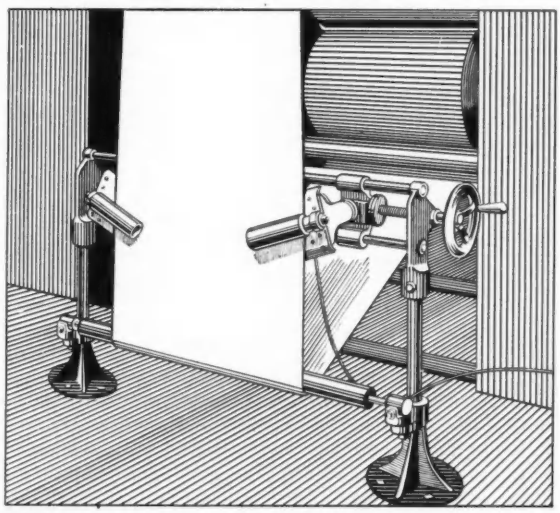

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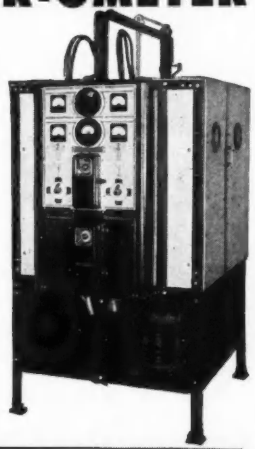

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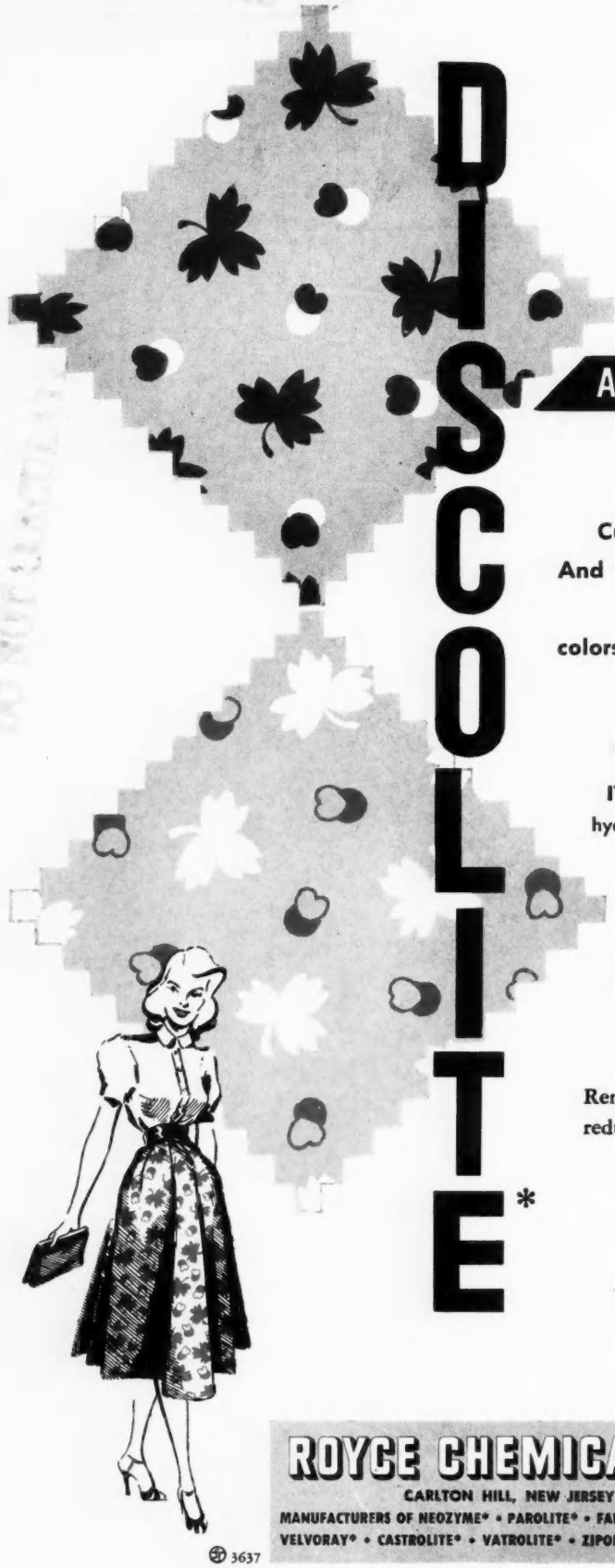

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DISCOLITE RETAINS its efficiency at high temperatures.

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